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ORIGINAL ARTICLES.

RELATION OF DISTURBANCES OF THE ALIMENTARY TRACT TO KIDNEY DISEASE.[1]

BY WILLIAM VISSMAN, A.B., M.D.,

LECTURER ON PATHOLOGY, BACTERIOLOGY, AND CLINICAL MICROSCOPY AT THE NEW YORK POLYCLINIC.

THE experiments of Bouchard show that intravenous injection at one time of a quantity of urea in excess of what would be excreted by an animal in several days, produces no alarming or serious effects. Furthermore, G. Klemperer recommends administration of urea to man as an excellent diuretic, while Bettman reports a number of cases in Erb's clinic, one patient having taken over 600 grams during the course of several days, without any deleterious effects. In fact, he states that the only unpleasant effect noted was a slight diarrhea in several cases. In the light of this testimony it may not be inopportune to look to other substances as the cause of the chain of symptoms which hitherto have been attributed to intoxication with products of animal metabolism when occurring in the course of renal affections.

It is customary to divide the diseases of the kidney into three classes, namely, those affecting the epithelial lining of the tubules, those expending their force upon the interstitial tissues, and, finally, those in which both the epithelial cells and interstitial tissues are affected at the same time. Clinically, these different forms may be, and often are, diagnosed with great accuracy; but anatomical experience has left the writer in much doubt as to there being a distinct line of demarcation between disease of the parenchyma and of the interstitial structures. However, there are innumerable cases where the great force of the anatomical disturbance is spent either on the parenchyma or the interstitial tissue, while the other remains *comparatively*, but not absolutely, unharmed, depending largely on circumstances.

In making a *post-mortem* examination, the similarity between the anatomical changes in the liver and spleen, and those in the kidney is very prominent, and close examination of the blood vessels throughout the body reveals in almost every organ the same type of lesion as is found in the kidney. Furthermore, careful examination of the bodies of patients who have succumbed to renal disease will usually show a very apparent lesion somewhere in the parenchyma of the alimentary tract, if not throughout its greater portion. These anatomical disturbances may vary within extreme limits. Naturally, the function of the organs will be interfered with in proportion to the gravity of these lesions, Patients suffer from disturbances of all sorts due to interference of excretion and secretion. To illustrate the grave symptoms which may be attributable to a very slight lesion in the alimentary tract, it is only necessary to refer to the records of any cholera epidemic in order to find that some of the apparently most healthy individuals of a community have become victims to this disease. When it is considered that cholera spirilla cannot withstand the normal secretion of a healthy stomach, it becomes very probable that these apparently healthy individuals really had some very slight disturbance of the stomach which interfered with its normal functions. Slight disturbances of digestion are very frequently due to causes to which every one is daily exposed, such as fatigue and indiscretion in diet, as partaking of too hot or too cold food and drinks, to say nothing of the chemical combinations of the ingredients of the drinks taken. The consequences of indiscretions of this character are many, depending altogether upon the substances ingested and the persistence with which the habit is continued.

It is naturally not supposed that one should partake of perfectly sterile food, but it is reasonable to expect that food known to contain pathogenic organisms will be rejected by every one. The non-pathogenic organisms, however, are not so absolutely harmless as they are generally supposed to be. No one could ascribe any ill effect to the ingestion of a delicious cupful of bouillon, yet how many could place the bouillon in what is ordinarily called a clean glass, allow it to stand until it becomes sour, and then drink it with impunity? Yet the same changes wrought by the bacteria in the bouillon in the glass may be, and are, produced in the alimentary canal when its physiological function is disturbed. Under this condition, this canal, with its absence of light, presence of moisture and warmth, and with its contents as a medium for the propagation of germs, is an ideal place for growth and proliferation of bacteria and the formation of the products of their metabolism. The effect on the organism of these products of bacterial metabolism differ according to the

[1] Read before the Medical Society of the County of New York, December 28, 1896.

organism by which they are produced. They may cause certain well-defined diseases, such as diphtheria, cholera, etc., while others may act simply as sedatives or irritants. The effect on the alimentary canal of sedative or irritating products of bacterial metabolism are too well known to require further discussion at this point. The constitutional effect upon animals when these products of metabolism are administered hypodermically is variable, usually those common to infectious diseases; and when large doses are administered the animals die in convulsions. An excellent idea may be obtained by observing children suffering from so-called summer diarrhea. The children show all of the symptoms of uremia, from the mildest to the most severe, including coma and convulsions. Autopsies of these cases show that the little sufferers have a kidney lesion, generally nothing more serious than a cloudy swelling of the parenchyma. However, a thorough cleansing of the bowel, either by high enema or cathartic, has such a mitigating effect on the little victim's suffering as to give almost conclusive proof that the cause of the trouble was the absorption of something from the contents of the alimentary tract.

Numerous bacteria which produce indol flourish in the intestine, and that the products of metabolism of these organisms enter the blood is evidenced by the voiding of indican with the urine of patients having disturbances of digestion. That the indican in the urine emanates from the alimentary tract is shown by the fact that if this canal is thoroughly cleansed, indican disappears from the urine. It is very probable that bacteria also enter the blood from the intestine and are voided with the urine, for Engel[1] in examining the urine of 31 cases of nephritis found bacteria in 29 cases. Among the bacteria found, the most frequent were pus producers, followed by colon, tubercle and typhoid bacilli in the order named. There are reasons for believing that other so-called non-pathogenic organisms also enter the circulation, because they have been found in the urine after the latter had been drawn with a catheter under aseptic precautions. Even though healthy blood serum has a certain power of disinfection, the work of Buchner, the writer, and others has shown that the dead bacteria possess the power of producing aseptic suppuration.

In 1878, Pasteur proved that sterilized (dead) pus-producing organisms, as well as live cultures, produced suppuration. Later, Grawitz, de Bary, *et al.*, proved the same in connection with staphylococcus pyogenes albus, bacillus prodigiosus, and bacillus pyocyaneus, and Buchner did the same for Friedländer's pneumococcus. Buchner[2] was not convinced that the effect produced by the sterilized cultures was not due to the product of metabolism of the organisms, and he therefore made extracts of the following organisms: Staphylococcus pyogenes aureus, cerius flavus, sarcina auranticus, bacillus prodigiosus, Fitzianus, cyanogenus, megaterium, romosus, subtilis, coli communis, acid lactici, anthracis, mallei, Kieler Wassor, proteus vulgaris, vibrio Finkler Prior., and produced an aseptic suppuration with these extracts also.

The writer[1] has found that if sterile cultures of tubercle bacilli were introduced into the ear vein of rabbits, hemorrhages into the renal glomeruli and interstitial tissue followed. Later, the walls of the blood vessels were markedly infiltrated with round cells, which infiltration also extended to the surrounding connective tissue. The same changes as were noted in the blood vessels and interstitial tissue of the kidney, were also noted in the liver and lungs, and later on, when other experiments were made in conjunction with injections of tuberculin, the same changes were noted, but the addition of the tuberculin treatment intensified the action to such a degree that the changes were very much more pronounced. The arteritis was such as to almost obliterate the lumen of the vessels. The tuberculin used was some of the first made and was, therefore, only a filtrate of a concentrated glycerin bouillon culture of tubercle bacilli. For other evidence that products of bacterial metabolism may, and do, produce nephritis, it is only necessary to examine the kidneys of a patient who has succumbed to an infectious disease. Here the character of inflammation will vary from the mildest (cloudy swelling) to the most serious changes. Fürbinger,[2] Roux and Yersin,[3] v. Kahlden,[4] Senator,[5] and others, proved that the toxins of diphtheria administered hypodermically were equally as effective in producing nephritis as the bacilli. A number of non-pathogenic organisms produce substances possessing virulent toxic properties, and these substances are at times produced in the alimentary canal and, when absorbed, produce marked changes in the kidney. These disease processes will vary in severity according to the nature of the toxin and the length of time the organ is exposed to it.

There are a great number of persons who suffer from slight derangements of the alimentary canal without being suspected of illness. They will give a history of going to stool, once, twice, or three times a day; others, once in two or three days, and almost every patient will say he has passed about a normal quan-

[1] *Deutsch. arch. f. Klin. Med.*, Bd. 26.
[2] *Berlin Klin. Woch.*, No. 30, 1890.

[1] Verhandelungen der Berliner Mech. Gesell., Virchow's Archiv, Bd. 129, 1892.
[2] Virchow's Archiv., vol. xci.
[3] *Annal. de l'Inst. Pasteur*, 1888-89.
[4] Zeigler's "Beitrage z. Path. Anat.," Bd. ix.
[5] *Deutsch. Med. Woch.*, No. 33, 1895.

tity, but upon being questioned closely he will inform the physician that he never felt completely relieved at any time. Examination will show that these patients are all voiding an abnormal urine which, when introduced under the skin of a lower animal, will be proved to contain irritating poisonous substances.

Most of the patients, also, excrete small quantities of a very highly concentrated and very acid urine, but others show just the reverse; and almost all the urines will be found to contain abnormal quantities of nitrogen compounds, to say nothing of other abnormal constituents, which may be found on chemical and microscopic examination. The probable cause of the sensation of not having completely relieved the lower bowel will be found to be that scybala are lodged in the canal and produce the disturbance, and that these scybala, aside from the disturbance caused merely by their action as foreign bodies, form an ideal nidus for the growth of bacteria and the production of toxins which, when absorbed and then voided in the urine, irritate the kidney, perhaps only very slightly, but when continued for years, as is the case with most persons following sedentary avocations, are very probably the true cause of the large number of kidney and blood vessel lesions among commercial and professional men.

DISCUSSION.

Dr. Satterthwaite remarked that there were a number of interesting relations between affections of the kidneys and those of the gastro-intestinal tract, which had recently come into prominence. He had been much interested in the case of a patient of his, who had come to him recently with a history of nausea, vomiting, and cramps, with dilatation of the stomach, due, it seemed, to pressure downward of a dislocated kidney on the head of the duodenum. There had been no pressure on the common duct. It was one of those rare cases in men that has been described of late years. He believed there was a small class of cases in which the normal contents of the intestines produced general infection of the spleen. In certain ones, he thought that experiments had shown that where the secretion of the pancreatic juice was diminished or prevented, decomposition of the intestinal contents would take place, and sometimes the functions of the kidneys would be seriously interfered with. This was in a measure corroborative of the position taken by Dr. Vissman, that in the sluggish indigestion of old people, the scybalous feces may give rise to renal troubles of an organic character. But to his mind the most interesting point in the discussion hinged on the casual relations between certain enteric diseases and nephritis. And in this connection he called attention to the fact that during the last year Dr. Seibert of this city appeared to have been the first in his locality to show that the enteritis of infants gives rise in some instances to acute nephritis. Judging from his personal knowledge in an institution with which he was connected, this association of diseases was not a frequent one, however; indeed, in half a dozen examinations in infantile enteritis, no implication of the kidneys was found. The difficulty in the way of determining this matter was a serious one. In infants under two years of age it was very difficult to obtain sufficient urine for examination without resorting to artificial means. In this connection he would remind the audience that neither albuminuria nor general edema, which were tolerably common in the enteric diseases of infants, was necessarily indicative of nephritis. Nothing less than a microscopic examination of the urine should be taken as an evidence of such disease.

In reference to the use of the term *auto-infection*, which had come up in the discussion, he objected to it, because it had come to be used as synonymous with a special bacterial invasion of the tissues, while in this instance, certainly, the kidneys were invaded by several if not many kinds of bacteria. And though the *bacillus coli commune*, whose habitat is in the mucus of the normal intestines, has been found in these cases in the kidneys, it had also been found at the same time in the lungs. As a matter of fact, when infection spreads from the inflamed bowels it is quite as apt to reach the lungs, perhaps the brain or meninges, as the kidneys, and it is quite possible that the kidneys may be infected from the bowels through the medium of one or other of these organs. Nor is there any proof that any of these microörganisms in any enteric disease is the cause of the nephritis, directly. There is but one law on the subject and that is Koch's law. The organism supposed to be specific must be found in the diseased tissues; it must be isolated and a pure culture made; finally, this pure culture when inoculated upon a susceptible animal, must produce the disease in question. Now, as in these cases it has not been shown that any given microörganism will answer this test, we must look for the virus either in some product of the bacteria or in some chemical substance apart from bacteria. He would, therefore, substitute for auto-infection the term endogenetic infection. This word is not a new one, but as used it is meant to indicate that the infection of the body proceeds from within the body, but is not necessarily associated with a given bacterial organism.

But there is also a more practical side to this matter. It is this: In treating enteric disturbances in general, we should as soon as practicable unload the gastro-intestinal tract, and then regulate the diet of

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the patient, so as to avoid the use of food that may decompose. Then we should also aim, if possible, to flood this same gastro-intestinal tract, so as to cleanse it frequently, thus reducing to a minimum the chance of endogenetic infection, using when available mild antiseptic solutions. Finally, we should select by preference those drugs which act as gastro-intestinal antiseptics, such, for example, as calomel and other salts of mercury. We know that they act favorably in kidney affections. His personal experience in the irrigation of the bowel in infantile enteritis with antiseptic solutions, had aided him in coming to these conclusions.

SOME HINTS AS TO THE TREATMENT OF "COLDS."

BY HERBERT B. WHITNEY, M.D.,
OF DENVER, COL.
PROFESSOR OF CHILDREN'S DISEASES AND OF PHYSICAL DIAGNOSIS IN THE STATE UNIVERSITY OF COLORADO.

ACUTE coryza is not only a universal malady, of which everyone has had some personal experience, but it is also a frequent object of medical advice. One is often consulted as to the best means of aborting this affection, as well as for methods of relieving the distressing symptoms which attend its course. Usually insignificant and temporary, acute coryza is not infrequently the first stage of a descending catarrh that ends in a long-continued and sometimes even dangerous bronchitis. In certain individuals—among whom the writer is so unfortunate as to be numbered—this tendency to invade the bronchial tubes is painfully constant and invariable. For these reasons, "a cold in the head" is not unworthy of careful attention on the part of the family physician; and a few therapeutic suggestions, gathered from various sources in the course of several years, may not prove unwelcome.

As regards prophylaxis, each individual is a law unto himself; he knows from personal experience his vulnerable point. With one it is the feet, with another the chest, sometimes the back of the neck, and again the scalp; many women are always liable to cold whenever they wash the hair. It is hardly necessary, therefore, to tell the individual what he must avoid; he knows.

There are, however, certain facts of common observation which may here be emphasized. In the first place, the general hardening process of the skin, so much practised by the European peoples, is unquestionably a prophylactic factor of the greatest utility. Exception being made of individuals of naturally weak constitution, the habit can hardly be too early acquired of a systematic gymnastic exercise of the superficial capillaries. In early childhood this may be begun by following the daily bath with a cold sponge effusion. Later, the whole bath may be cooler, and after the age of puberty, there is nothing better than the cold plunge or shower-bath of perhaps thirty to sixty seconds' duration. Of course, much depends on the surroundings and the exercise of common sense: the bathroom should neither be icy-cold nor so hot that the rubbing-off ends in an exhausting perspiration. My own plan is as follows: The room being at a temperature of about 60° or 65° F., two or three minutes are spent at the bowl in the toilet of the hands and face. During this time the naked body is exposed—beneficially, I think—to the slightly chilling atmosphere of the room. This is followed by a quick shower-bath of practically the temperature at which the water comes from the hydrant. A rather vigorous rub, continued only until the skin is dry, leaves the body warm and glowing. It is to this daily exposure that I attribute my comparative freedom from colds of late years.

Another fact of prophylactic interest is generally recognized: colds rarely follow exposure during exercise, or immediately after it. It is only after a certain degree of cooling has taken place that the danger begins. A cold plunge into the river immediately after a hard pull is the routine practice of our college crews, even late in the autumn months. In climbing the Kœnig's pass in the Tyrolese Alps, I have, with perfect impunity, made a complete change of underwear in the midst of a driving snowstorm; being overheated from exercise, I knew that a *brief* exposure would have no effect upon the superficial circulation. It is only after a certain time has elapsed (as indicated by the sensation of cooling off) that the possibility of taking cold begins. If exercise is resumed before there is any sensation of chilliness or drying, a cold will almost invariably be avoided.

When a coryza is threatened, or even already established, it may, if taken early, frequently be aborted. Measures to this end may be both general and local.

General Treatment.—The efficacy of quinin in certain cases can scarcely be doubted. As a rule, it must be taken within the first twelve hours, and to the quantity of at least 10 grains, in a single or divided doses. Unfortunately, the physiological effect of the drug is often hardly less disagreeable than the disease itself, and, moreover, its curative action is very uncertain. Personally, I rarely advise it. Other cases are favorably influenced by diaphoresis. Under favorable circumstances, as, for example, where the patient can remain on the following day at home, and especially where, in addition to the catarrhal symptoms, there is some little febrile movement and myalgia, the following common procedure

may be advised: Ten grains each of Dover's powder and phenacetin are put into four capsules; two of these are given at once, and the patient remains for about ten minutes in a hot bath. He then takes a hot lemonade or rum punch and gets between several thicknesses of heated blankets. In half an hour the second two capsules are given, unless perspiration is already abundant. Such perspiration should continue for an hour, after which the skin is slowly dried, and the patient retires for the night to a comfortable bed.

But it is not often that such circumstantial treatment of a simple coryza is necessary, or even desirable. For people who are compelled to be up and about, or who, perhaps, have some urgent engagement for the evening, there are two remedies, either of which offers a very considerable prospect of quick relief. The first is the tincture of euphrasia officinalis; ten drops of this every ten or fifteen minutes for two or three hours will sometimes almost completely dissipate the headache and the uncomfortable sensation of stuffiness and frontal pressure so characteristic of acute nasal catarrh. A second, and perhaps more valuable—certainly more tested—remedy is gelsemium sempervirens. The action of this drug upon the first and second branches of the trigeminus is well known; and it is probably through its effect upon the nasal branches of the ophthalmic nerve and of the ganglion of Meckel that it exercises an abortive influence in this affect on. It may be given at the outset as a single dose of 20 drops of the tincture, or the same quantity may be added to half a tumbler of water, and of this a teaspoonful be taken every ten minutes for two or three hours, or until diaphoresis results.

Later, when the coryza has progressed to the stage of abundant discharge, the only internal remedy that I have found of any service is atropin, in doses of $\frac{1}{75}$ of a grain, once or twice daily. In some people, this produces so much dryness of the throat, or mydriasis, that it has to be discontinued; in others, however, it causes an agreeable diminution in the quantity of the discharge.

Local applications, chiefly in the form of inhalations, are more popular, more convenient, and, perhaps, on the whole, more useful than any of the remedies hitherto mentioned. An old and familiar combination is the following:

℞ Acidi carbolici, ... 3 i
Spts. vini. rect., ... 3 iii
Liq. ammon. caust., ... 3 i
Aq. dist., ... 3 ii
M. Sig. For frequent inhalation.

This mixture will undoubtedly afford considerable relief, but it is hardly to be compared in general efficiency with others given below.

During the first two or three days of a coryza the most useful of all the preparations I have employed is a snuff, the principal ingredients of which are cocain and menthol:

℞ Cocain hydrochlor., ... gr. iiss
Menthol, ... gr. iv
Acidi borici, ... 3 ss
Pulv. coffeæ, ... gr. viii
M. Sig. Snuff (Coupard).

Of this, a small pinch is directed to be taken in each nostril every two or three hours. It gives great temporary relief, and I am frequently asked to have the prescription repeated. This snuff may also be used with benefit after there is an abundant catarrhal secretion. It may, with advantage, be combined with the internal use of gelsemium, or, later, with atropin.

Another good method for the local use of menthol has recently been strongly urged by R. Wünsche (*Ther. Monatsehfte*, 1895, No. 9). He prescribes the following:

℞ Menthol, ... 3 ss
Chloroformi, ... 3 v
M. Sig. Inhalation.

At the first indication of coryza—such as sneezing and frontal discomfort—4 or 5 drops of the above mixture are quickly rubbed over the palms of the hands, the latter held like a cone over the nose and mouth, and a few deep inhalations are taken. It is claimed that all tendency to sneeze at once ceases, and the coryza is almost invariably aborted. For additional surety, it is recommended that the inhalation be repeated two or three times in the course of the following day. Wünsche has also found that these inhalations are a good prophylacticum against influenza, and calls attention to the experiments of Rönicke, which seemed to demonstrate the marked germicidal action of menthol fumes. The great benefit to be derived from menthol in various affections of the upper air passages, as appears from the many recommendations which have come from different sources, certainly warrants an extended trial of this remedy in acute coryza.

Camphor is another drug that has for a long time borne the well-deserved reputation of being serviceable in this disease. At Bamberger's clinic, in Vienna, the routine treatment of the first stage of coryza is this snuff:

℞ Camphor trit., } aa . . . . 3 ii
Sacch. alb., }
M. Sig. A small pinch in each nostril every two hours.

I have also used the following method with advantage, although, on the whole, the snuff is to be preferred: The patient is directed to put an ounce of powdered camphor in a shaving-mug and to fill

with boiling water; a cone of stiff paper is then arranged so as to fit over the mug and to cover the face, and the fumes are thus inhaled for twenty minutes every two or three hours. Here, again, the fault of the method lies in the fact that it is too troublesome; for a simple "cold" people demand a simple remedy, and anything else is regarded with disfavor from the start.

During the stage of exudation, it is my personal belief that local treatment is of little benefit. If a remedy is desired, I know of nothing better, and at the same time simpler, than a snuff of alum, 1 part to 10 of powdered sugar or boric acid.

In closing this brief *résumé*, I wish to disclaim any originality whatever in the suggestions offered. My object has been simply to state a few useful empiricisms which, in the course of years, have been blown in upon me by the four winds.

BOVINE TUBERCULOSIS AS A FACTOR IN THE PRODUCTION OF HUMAN TUBERCULOSIS, THROUGH THE USE OF MEAT AND MILK.[1]

BY D. H. BERGEY, M.D.,
OF PHILADELPHIA;
FIRST ASSISTANT IN THE LABORATORY OF HYGIENE, UNIVERSITY OF PENNSYLVANIA.

TUBERCULOSIS causes about fourteen per cent. of all deaths—or more than smallpox, diphtheria, scarlatina, typhoid fever, typhus fever, yellow fever, cerebro-spinal fever, Asiatic cholera, relapsing fever, leprosy, measles, and whooping cough, combined. The extremely high death-rate from tuberculosis should call forth all our dormant energies to prevent its spread, and to arrest its further progress as far as possible. Preventive measures are of especial importance because of the insidious onset of the disease, and its relatively slow progress when once established; because it causes such prolonged suffering, entails such great expense to those afflicted with it, and is so readily transmitted from the sick to the well.

The bacillus tuberculosis is now considered by all the best authorities to be the real and active cause of the disease, yet they all agree that the environment and the vital resistance of the body are important factors in facilitating or retarding its propagation. There can be no doubt that the nature of the soil and the condition of the biologic functions of our bodies will influence the results when the germs of tuberculosis succeed in gaining an entrance. On the other hand, there can also be no doubt that it is impossible to produce the disease in human or animal bodies without sowing its specific germ in such bodies, regardless of what the nature of the environment may be, or of the extent to which the vital resistance of the body has been reduced.

There is no longer any dispute as to the identity of the disease as it occurs in man and the domestic animals—only excluding fowls. We have abundant experimental evidence that the disease is readily communicated from man to the lower animals, and that the lesions produced are identical with those observed in man. There is a difference of opinion as to the extent to which tuberculosis prevails among the domestic animals. It has been estimated that from five to fifteen per cent. of milch cows are tuberculous. The prevalence of the disease among cattle varies greatly in different sections, being more common in those sections in which the cattle are confined in close stables during the greater portion of the year.

The possibility of the transmission of tuberculosis from the lower animals to man has long been recognized. The danger of contracting the disease through the consumption of the milk and meat of tuberculous cattle has been known to the scientific world for more than a hundred years. The extent of the danger is to-day the principal controversial point. It is frequently contended by those who pretend to assume a conservative position that we lack sufficient positive data, experimental and physiological, to warrant us in formulating definite conclusions on the subject. Happily, however, recent literature on the subject abounds in data accumulated by a host of scientific observers, whose competency is unquestioned, that shows the danger of infection through tuberculous meat and milk is very great.

As the result of clinical observation, a number of observers report instances of infection through the alimentary tract in animals by mixing tuberculous sputum with the food. Reissmann[1] quotes Jacobs, Devillers, Lengler, Durieux, Demme, Bollinger, Lamallerée, Nocard, Johne, Peters, Morro, Zschokke, and Eberlein, who report instances of infection in this manner in heifers, cats, dogs, hens and parrots, as the result of taking human tuberculous sputum with the food. He also quotes Klebs, Goring, Zippelius, Lehuert, Kloss, Böttcher, Woodhead, Utz, Demme, Uffelman, Felizel, Martin, Ebstein, Hergard, Johne, Prümers, Gosse, Sonntag, McFadyean and Woodhead, Bang, and Lucas, who report instances of infection in heifers, calves and pigs, from milk, and also of swine feeding on the meat of highly tuberculous heifers. Kolb also reports cases of three pigs fed on raw tuberculous meat,

[1] Read before the Montgomery County Medical Society, Norristown, Pa., December 16, 1896.

[1] Reissmann, *Hygienische Rundschau*. Berlin, 1896, No. 18, 19, 20 and 21.

which showed tubercular infection of the alimentary tract. Schmidt observed a number of cases of infection in chickens, especially of the liver, that had been fed on raw meat from a highly tuberculous ox.

Reissmann states that the presence of tubercle bacilli in the walls of the blood-vessels, in the lumen of the vessels, and in thrombi, as well as in the vicinity of the vessels, has been demonstrated in a number of cases of advanced tuberculosis in cattle by Fütterer, and that Rütimeyer found bacilli in the blood of a case of acute general tuberculosis, and in another case in the spleen. Sticker, in two cases, and Ulacocis, in one case, of generalized human tuberculosis, found bacilli in the blood taken from the tip of the finger. Meisels, and Lustig, also found bacilli in the blood, and Heller reports a similar instance. Weigert, Nasse, Herxheimer and Bergkammer found bacilli in the blood and lymph of cases of generalized and miliary tuberculosis. Confirmatory reports have also been made by Hanan, Hagemann, Bang, Sticker, Sacerdoti, Cantoni, Ehrlich, Guttmann and others, indicating that there is danger of infection from meat of tuberculous cattle even in the absence of lesions in those parts.

The report of the Royal Commission on Tuberculosis[1] is the most important communication on this subject of recent date. This report is based on—(1) the experiments of Dr. Sidney Martin, who fed pigs, guinea-pigs and rabbits on meat and milk derived from tuberculous animals, though all tubercular lesions had been first removed. Of the animals thus fed, 36 per cent. (5 out of 14) of the pigs became tuberculous; of the guinea-pigs, 16 per cent. (24 out of 145), and of the rabbits, 15 per cent. (2 out of 13). He also fed one pig, 8 guinea-pigs and 10 calves with material containing tubercular matter, each animal receiving only a single dose. Of these animals, the pig, 6 guinea-pigs and 8 calves became tuberculous. (2) The experiments of Dr. Sims Woodhead, who fed 7 pigs, 5 cats and 76 guinea-pigs on tuberculous matter, and all the pigs and cats and 50 of the guinea-pigs became tuberculous. Both of these investigators found that the milk of tuberculous cows contained bacilli only when the udder was also diseased, and was only then capable of conveying the disease to the animals fed upon the milk, or inoculated with it. When the udder was diseased the milk possessed a most extraordinary virulence. They report that the udder may be affected in the early stage of the disease, and when diseased the process spreads with great rapidity. At times the udder may also be diseased without presenting any definite signs in the earlier stages, thus making it very dangerous to use the milk. Both Dr. Martin and Dr. Woodhead insist that no tuberculous animal of any kind should be allowed to remain in a dairy.

Dr. Woodhead experimented in roasting and boiling meat smeared with tuberculous matter. He found that rolls of such meat of over three or four pounds in weight, were not sterilized by the ordinary methods of cooking. He also experimented with tuberculous milk heated to 80° C. (176° F.) for ten minutes, and found that guinea-pigs fed on such milk become tuberculous.

As the result of his experiments, Dr. Martin was especially impressed with the danger of infecting the entire carcass of an animal in removing the diseased organs from it. Manifestly this danger is least in those cases in which the disease is distinctly localized in a single organ, but the danger is greatly increased when the disease is more generalized. He says that "one is driven to the conclusion that when meat is infective it commonly acquires its properties by being accidentally contaminated with tuberculous material during its removal from the carcass. This conclusion, it is evident, is one of great practical importance, bearing directly on the question of the condemnation of the meat of tuberculous cattle for human consumption. And it is evident, also, that the infective properties of meat might vary with different series of experiments; . . . the result depends on the care taken in guarding against contamination more than on anything else."

Dr. E. C. Schroeder[1] reports several series of experiments with milk for the detection of tuberculosis. In the first series the abdominal cavity of guinea-pigs was injected with nineteen samples of milk from different dealers or dairies, only one of the samples proving to be tuberculous. In the second series of experiments the abdominal cavity of guinea-pigs was injected with twelve samples of milk taken from cows that were known to be tuberculous, only one of the animals succumbing to the disease.

Dr. E. O. Shakspeare,[2] in speaking of tuberculosis in relation to infectious milk, says that "since tuberculosis of the human race has become better known, it has been found that in infants and young children, in some large cities, the mortality from some form of tuberculosis is far greater than has been generally believed, amounting, in some localities, to one-fifth of the deaths of the young. A significant fact in this connection is that it is most frequently some part of the digestive passages that becomes first affected in children."

[1] Report of the Royal Commission on Tuberculosis. London, 1895.

[1] Schroeder, U. S. Department of Agriculture, Bureau of Animal Industry, Bulletin No. 7. Washington, D. C., 1894.

[2] Shakspeare, Public Health Circulars issued by the Philadelphia, Pa., Board of Health, No. 11. Philadelphia, Pa., 1893.

Dr. Irving A. Watson[1] cites the following observers on the question of transmission of tuberculosis through the milk of tuberculous cows: "Leonhardt reports the case of a healthy infant, of healthy parents, which was weaned and put on cow's milk. The child soon died of tuberculosis of the meninges, intestines, and mesenteric glands. The cow which gave the milk was found to be tuberculous. Another child fed on the milk of the same cow died, at about the same time, from tubercular meningitis. Sonntag reports the case of a six-months' infant, of healthy parents, which at autopsy showed miliary tuberculosis of the meninges. It was fed with milk from a tuberculous cow. Hermsdorf gives three cases in which there was extensive intestinal tuberculosis, besides less general affection of other organs. One had taken uncooked milk from a tuberculous cow. Demme reports the case of a four-months' infant, which at autopsy showed tuberculosis of the mesenteric glands. There was no tuberculosis in the family for two generations on either side. The milk came from a cow with general tuberculosis. Bollinger cites Stangs' case of a boy of five years who sickened with ascites and enlarged glands in the abdomen. At autopsy the chief lesion was tuberculosis of the abdominal lymphatics, but there was also tuberculosis of the serous membranes and of the lungs. There was no tuberculosis in the family for two generations. The child had for years been in the habit of drinking milk warm from a cow, which, growing thin before the boy died, was killed, and found to be tuberculous."

Dr. L. Emmett Holt[2] reports on 1045 consecutive autopsies from the records of the N. Y. Infant Asylum and the Babies' Hospital—ten per cent. of which were found to be tuberculous. In the latter, which receives only sick children, the percentage was the higher. Of 143 children, fifty-seven were less than one year, thirty-nine, between one and two years, thirty-two, between two and five years, and only fifteen over five years of age.

It is unnecessary to further multiply the citations of the results from the experimental investigation of the question under discussion, or the results of clinical and pathological observations as to the direct transmission of the disease through the use of tuberculous meat and milk. It should be evident to every one open to conviction that there is positive danger in the use of such products.

The phase of the subject which gives rise to differences of opinion to-day, among medical men as well as the laity, is not whether the meat and milk of tuberculous cows are dangerous, but at what stage of the disease do they become dangerous. It is evident, from the results of experiments upon animals, that in the earlier stages, while the disease process is still localized in a single organ, that the meat of such animals is not very dangerous; it is claimed by some to be innocuous. It is also evident, that as long as the udder of a cow is not involved, the large majority of cows do not yield tuberculous milk. The varied opinions demonstrate, to a great extent at least, the differences in the laws and customs, in different countries, with regard to the use of the meat and milk of animals suffering from localized tuberculosis. This difference is only in part explainable on these grounds. A further cause of the differences in these laws is also due to the fact that in some of these countries the laws have not been brought up to the level of our present-day knowledge of the subject.

In the several German States the laws vary to a considerable extent. As a rule, the meat is condemned when there is fever, when the animal is emaciated, when the disease has become generalized, and when there are nodules present. In France, Italy, Belgium and Denmark the same general law also applies, and when the disease is localized, and the diseased portion is easily removable, the meat may be used. In Saxony and Mecklenburg the diseased meat must be divided into small pieces and sterilized at 100° C. for half an hour before it is sold as food. In Saxony, Bavaria, and Italy such meat can only be exposed for sale when distinctly marked with a declaration that it came from a tuberculous animal, while in Denmark it is sold as second-class meat.

In searching the literature of the subject for expression of opinions by eminent scientists on the question of the use of the meat and milk of tuberculous cows, I find that Drs. Martin and Woodhead, already quoted, are of the opinion that all diseased animals should be killed and the meat condemned. Dr. Deshayes[1] says that "all animals infected with tuberculosis, even localized, should be unalterably rejected for human consumption."

Dr. Theobald Smith[2] coincides with Nocard, whom he quotes, in saying that all highly tuberculous animals should be condemned. Those having the disease in its incipient stage should be quarantined, fattened, and then sold only to the butcher. If they are found to be but slightly diseased, the meat may be exposed for sale after removal of the diseased portions.

Frequent visits to the abattoir of Philadelphia

[1] Watson, New Hampshire State Board of Health Report, 1892.
[2] Holt, MEDICAL NEWS, December 12, 1896, p. 656.

[1] Deshayes, *Revue de Hygiene*. December, 1893, p. 1074.
[2] Smith, Bureau of Animal Industry, Bulletin No. 7. Washington, D. C., 1894.

convince me that the meat of cows with localized tuberculosis is allowed to be sold. When the disease is somewhat generalized, I am informed, the inspectors condemn the carcass, and it is converted into fertilizer. Many writers claim that it is merely a matter of sentiment whether we condemn the meat of animals in which the disease is localized. To me it is a matter of the greatest vital importance. When we consider the markedly lower mortality from tuberculosis among the Jews, it is evident that their greater immunity from tuberculosis must be traceable to their well-known rigid meat inspection alone, because, as a rule, they do not live under the most favorable hygienic conditions. They discard the entire carcass of every animal that shows signs of disease of the organs of the great body cavities. Such meat is then sold to ordinary consumers.

To guard against the dangers of infection through the use of tuberculous meat and milk, we should urge the necessity of the thorough inspection of all cows kept for breeding purposes, or whose milk is offered for general consumption. All animals intended for use as meat should also be inspected, and those showing a trace of the disease should be condemned as unfit for consumption. The most reliable and ready method known to us to-day, by means of which we can detect the disease even in the incipient stage, is the tuberculin test. This test is now employed in many States and in many of the foreign countries, and, if the tuberculin has been prepared by competent bacteriologists, it is without detrimental effects on healthy animals.

In the absence of positive knowledge as to the healthfulness of cattle whose meat and milk is intended for human food, it is of the utmost importance that all milk be heated to 180° F. for five minutes before it is used, and that our meat be thoroughly cooked in order to avoid the danger of infection through its use.

AN ADDRESS.

THE COUNTRY DOCTOR.[1]

BY FREDERICK HOLME WIGGIN, M.D.,
OF NEW YORK;
VISITING GYNECOLOGIST TO THE NEW YORK CITY HOSPITAL, BLACKWELL'S ISLAND.

As occasional introspection into individual life has an acknowleged value, it may be of practical benefit to turn our attention for a time to the consideration of a few points in the daily life of the learned profession to which we have the honor to belong. Therefore, I propose briefly to touch on some points of country medical life, and later to call attention to what I believe to be the needs of this Association to further its development and to bring it to the highest state of efficiency of which it is capable.

It is frequently thought by the country physician that all the professional advantage lies with his city brother; that he alone has opportunities for gaining a fair support from his professional labors, of increasing his store of knowledge, and of adding to the general professional welfare. To one acquainted with the environment of the city physician, and the many difficulties which beset him, which can be overcome in most instances only by years of arduous work before even his living is assured, this feeling is hard to understand, and to such an observer a prosperous village or small town seems a more attractive place in which to pursue the practical work of the physician; for, here are no dispensaries or hospitals casting, when abused, their baleful influence over the community and the profession under the guise of charity; here the public is more or less willing to share the burden of caring for the destitute with the physician; here he is able to support himself from the beginning of his professional career, can acquire a pleasant home early in life, and can bring up his family in the country, whence, as President Eliot, of Harvard College, has pointed out, the best students come.

With the large and varied experience which most country physicians have, opportunities for making reputation occur earlier and more frequently out of the city than in it. In the country fees are more certain to be collected, and the country physician's relations to his patients and the community are pleasanter, closer, and more important than they are in a large city. If, on the other hand, country practice involves greater physical exposure and fatigue, the practitioner is spared much of the mental anxiety and financial care of his city brother; and finally, if it is objected that the fees which dwellers in rural districts are able to pay are much smaller than those obtained by city physicians, it may be answered that the personal needs and the general expense of living are less in the country than in the city, while it is a fact that the income of the average city physician is not relatively, or actually, greater than is that received by the average country physician.

As a more intimate acquaintance with country medical life is obtained, one finds less difficulty in understanding why, in the midst of so much that is desirable, the mind of the average country physician is despondent. It is found that here, as elsewhere, the profession has been engaged for many years in educating the public and themselves to believe that medical professional services have little or no pecuniary worth. If the fee table of the local medical society is consulted, the maximum rate of fees seems satisfactory and capable of returning a good income to an industrious physician, and the fees also seem well within the means of the more prosperous members of the community; but a question elicits the answer that charges are based not upon this scale, but upon the minimum rate, which therefore becomes the standard, and which is often shaded, even for the well-to-do. Consequently services and experience are sold for and believed to be worth only a fraction of their value, and frequently for less than a livery-stable keeper would value the services of a horse

[1] President's address delivered before the Litchfield County, Conn., Medical Association at the annual meeting held at Litchfield, October 8, 1895; also read by request at the meeting of the Conn. Medical Society at New Haven, May 28, 1896.

for the same time and distance. As a result of this supposed necessity of either meeting competition or retaining personal popularity, the financial results are out of proportion to the efforts expended, and are inadequate. So the physician frequently adds commercial ventures to his professional duties, which, proving lucrative, soon become the vocation, and medicine the avocation. Losses incurred in performing professional duties at ruinous prices are made up on sales of drugs, general merchandise, or farm products. Time which ought to be given up to self-improvement or in resting body and mind is taken up with these outside pursuits, vacations are seldom indulged in, meetings of medical men are gradually neglected, and less and less thought or care is given to the general professional welfare, causing possibly a still further reduction in the fees demanded. Again, accounts are carelessly kept, bills are rendered only at long intervals, and the patient, taking this as an evidence of the physician's prosperity, procrastinates about settling his account. But the worst result of this system of small fees is the gradual deterioration in the quality of the physician's services, who, instead of doing the best work of which he is capable, becomes satisfied to render the poorest, as being all that the patient has paid for. The patient is frequently allowed to make the diagnosis, and under this method the writer has known good men to be credited with serious errors of diagnosis. He has known a case of imperforate hymen, with enlarged uterus and a projecting vaginal tumor, caused by retained menstrual fluid, diagnosticated as a case of amenorrhea, and the patient advised that Nature must take its course, which advice was certainly not worth the 50-cent fee paid for it; of a patient with a large carcinomatous testicle, which weighed over two pounds after its removal, having been told that he was demented when he stated his case. No examination was made, and the patient was dismissed after paying his fee, with the admonition that "some people are always imagining that they have trouble with their privates." The patient then called on the writer, who, after a careful examination, diagnosticated the case and advised operation, which was consented to, and a larger fee demanded, which was cheerfully paid. The writer has known of a case of empyema, occurring in a child of four years, considered and treated as one of worms, because the child stated that his pain was in the region of his navel; and as the 50-cent fee was not supposed to include a physical examination, none was made. He has also known of pleurisy with effusion diagnosticated and treated as influenza because the patient suggested this diagnosis.

Aseptic surgical technic is often made light of as being too expensive for country work. One extreme case treated on these lines, which came under the writer's notice, was that of a patient who had received an injury which crushed one of his fingers. This was amputated with an ordinary pocket-knife, the operation being naturally followed by septic infection, and this, in turn, by amputation of the patient's arm. The final outcome was the death of both the patient and the physician, who had inoculated himself in the careless handling of the wound.

Such experiences, which were common when the writer began his professional career in this locality, some years since, have happily ceased. The ordinary result of working under such a system as has been alluded to, is that after some years of active work and physical hardship, a complete breakdown occurs of mind, body, and, unless wealth has been acquired by some other means, of estate as well. On the other hand, it was found by the writer that an attempt to render a more careful, and therefore better professional service, was promptly met by willingness on the part of the community to pay more liberally, when the reason for the increased charge was explained. The result of this was that after a few years the income derived from professional work alone was nearly double that received by the writer's predecessor in the same field after twenty-five years of toil. The benefit was certainly not wholly confined to the writer, but extended to all who practised in the neighborhood, and to those who succeeded to the work. If it were possible, without being ungenerous or oppressive, to educate the public to a willingness to pay for a service what it was fairly worth in one locality, it can be done elsewhere.

People are beginning to realize that the country doctor must be a better physician than the city doctor. In the course of a recent editorial in one of the medical journals it was stated that, "Country practice, strange as it may appear, demands a higher grade of professional attainments at the start than those by which a young man makes an ordinary success in the city. The country physician is a marked man from the beginning, is generally known by every one in his town, and must necessarily, at the very outset of his career, set the pace for the remainder of his life."

Be practitioners of medicine only. Bend all your energies to the care of your patients and to self-improvement. Make your patients realize that you are abreast of the times and doing only the best professional work of which you are capable. Attend and take part in the meetings of medical societies. Go from time to time to the city, and see what others are doing, and get out, as Dr. W. H. Thomson aptly puts it, "a new edition of yourself." Take a yearly vacation for bodily and mental recreation, and you will find that your patients will not object to paying a higher fee for your services when you demand it. Give more thought to the general professional welfare, bearing in mind that if one would elevate himself he must elevate the profession to which he belongs.

There are, of course, various ways in which this may be accomplished, but the most practicable for most of us is by having personal pride in the reputation of the local medical association, and by taking an active part in its work. A serious effort should be made to attend all the meetings. Records of cases should be kept, so that written histories of those of interest can be presented at the meetings for consideration and discussion. It is a common experience for a presiding officer, after asking members if they have not cases of interest to report, and meeting with a negative reply, to hear the same members, after the close of the meeting, recount various experiences of general interest. Each member should be required in turn to write and read a short paper, the chief points of

which should be furnished to some of the other members prior to the meeting, so that they can prepare themselves for its discussion.

When a member is honored by an election as a delegate to a local, state, or national association, he should consider it his duty to attend the meeting. Owing largely to the failure of members appointed fellows of the State Society to attend the meetings, this Society has lost much of its prestige, and has of late years exerted little influence on the general professional welfare. Official position should be considered one of honor and trust, and every effort should be made to perform the various prescribed duties by those chosen to fill them. Quarterly meetings should be held regularly in different towns of the county, so that all members may each year have an opportunity of attending a meeting of the Association convenient to their own homes. If the best work of which this Society is capable is to be obtained the annual dues should be increased sufficiently to permit of the employment of a stenographer, to attend the meetings and report the proceedings. Arrangements could then be made with a medical journal to publish them. It is hard to get men to do their best literary work unless opportunity is afforded to record it. I believe that more effort should be made to develop the social side of these meetings, and the annual dues should admit of the general entertainment being paid for out of the Society's treasury. Were these suggestions carried out there would be little difficulty in maintaining full attendance at the meetings. These days would come to be looked upon as pleasant and profitable; days for consultation, self-improvement, and social enjoyment; and, in time, the Society would become a model for others to follow, whether of city or state.

A society is what its members and officers make it, and nothing more; and to make it prosperous and influential all must join hands, each doing his duty. Individually, you would soon realize the benefit. You would find your interest constantly growing in scientific medicine as you studied systematically in the preparation for the writing of papers or for the purpose of taking part in their discussion, and this would be followed, as the members of the community realized that their doctor was up-to-date, by their increased respect and a willingness to pay more generously for his services. People take us largely at our own valuation. Remember that much original work has been done by country physicians, and that by reason of such efforts great advance has been made all along the line of medical work. Jenner, the discoverer of the protective influence of vaccination; Ephraim McDowell, who in 1809 performed the first successful ovariotomy of which we have record; Joseph Glover, of South Carolina, who in 1813 first successfully performed the operation of hysterectomy; Marion Sims, the father of gynecology, who perfected the technic of his operation for the closure of vesico-vaginal fistula in the negro cabins of the South; Nathan Smith, of New Haven, who was the first to successfully perform an amputation through the knee-joint, and who, without knowing of McDowell's work, successfully performed an ovariotomy in 1821, advancing the technic of the operation by returning the stump into the peritoneal cavity; and Cogswell, of Hartford, who first succeeded in ligating the common carotid artery, were provincial physicians who became world-renowned.

Of McDowell's work, Dr. Dennis has said, in his essay on "The Achievements of American Surgery": "Few men can realize the influence of McDowell's first ovariotomy upon the whole field of abdominal surgery. It is indeed a sublime thought to consider that a man was found with the courage of his convictions to do what no man had ever done, and to operate within the noise of an infuriated mob beneath his windows. This mob would have lynched him if Mrs. Crawford had died. Having escaped the angry mob, he was pointed out as a murderer by his colleagues, and was also condemned by the highest scientific authorities in Europe. In America, therefore, under such circumstances, and under such conditions, the birth of the greatest operation in surgery occurred, an operation destined to save in the future millions of human lives." The *Medico-Chirurgical Review*, speaking of McDowell's achievement, said: "A back settlement of America, Kentucky, has beaten the mother-country, nay, Europe itself, with all the boasted surgeons thereof, in the fearful and formidable operation of gastrotomy with extraction of diseased ovaries."

Finally, Dr. Joseph Eastman of Indianapolis, in responding recently to the toast, "Ephraim McDowell," said: "Kentucky is justly proud of her statesmen, of her orators, and her soldiers, but shall not the achievements of her statesmen succumb at last to the pitiless logic of events? Shall not the voice of her orators grow fainter with coming ages? Shall not the victories of her soldiers be found at last only in the libraries of students of military campaigns, while the fame of this village surgeon, like the ever-widening waves of the inviolate sea, shall be wafted to the utmost shores of time, hailed alike by all nations, in all ages, for having lessened the burden and prolonged the span of human life?"

CLINICAL MEMORANDUM.

CATARACT EXTRACTION FOLLOWED BY COMPLETE ATROPHY OF THE IRIS; PRIMARY SARCOMA OF THE IRIS.[1]

By FRANK H. EDSALL, M.D.,
OF PITTSBURG, PA.;
OPHTHALMOLOGIST TO ST. FRANCIS HOSPITAL, AND TO THE PITTSBURG HOSPITAL FOR CHILDREN.

THE two cases, reports of which follow, are, I think, sufficiently unusual to make them of interest as curiosities.

CASE I.—Mr. H., a glass-worker in one of the neighboring towns, came under my charge in June, 1895. He was at that time about twenty-four years of age, in vigorous health, and with no personal or family history which would in any way shed light upon the causation of the trouble for which he consulted me—complete opacity of the lens of the right eye. He had first noticed trouble with this eye some three or four months before I saw him, which trouble, then as now, had been limited to defect in

[1] Read before the Pittsburg Academy of Medicine.

the vision of the eye. It had progressed steadily up to the point which it had reached at the time he came under my charge. There was absolutely no history of injury, nor of inflammatory disease of the eye within the patient's memory, the only thing which had attracted his attention having been the increasing dimness of vision and the white spot in the pupillary space. He was annoyed by this disfigurement, and it was more for the purpose of being freed from it for cosmetic purposes than for possible improvement in vision that he consulted me with regard to its removal.

The eye was carefully examined, but nothing beyond the complete white opacity of the lens could be determined. There was no inflammatory trouble, no defect in light projection, no increase in tension, no scars nor marks of any kind. The left eye was in every way normal beyond the presence of a moderate hypermetropia. After explaining to the patient the possibilities and limitations of the proposed operation, and being urged by him to operate for cosmetic purposes, I consented to do so. He was accordingly sent to St. Francis' Hospital, and a needle operation was made. No symptoms of any moment were observed subsequent to the operation, and the patient returned home in a few days. At the end of about two months, absorption being incomplete, I repeated the operation, this time at my office. As before, there were no unfavorable symptoms following the operation, and further absorption took place as a result of this interference, but the process stopped short of entire disappearance of the cataract, and a third operation became necessary. This was undertaken about six weeks after the second, and, like it, was done in my office. No undue traction was made upon the zonula in either operation, and in the last, as in the others, no accident or complication occurred. For several days following, the case behaved very much as it did subsequent to the previous operations, except that there was some increase in the redness and injection of the ocular conjunctiva, which injection was rather more persistent than before. On the sixth day following the operation the patient complained of considerable pain in the eye. The eye was, at this time, noticeably though not violently injected; there had been some further absorption of the lens, and a few small flakes of lens-substance could be noticed in the anterior chamber. The aqueous humor was slightly turbid. The usual treatment for a mild iritis seemed all that was indicated in the case at this time, as the inflammatory symptoms were not violent and the eye was already under the influence of atropin. The pain lasted but a few days and the other symptoms of inflammation became gradually less marked, but did not wholly disappear for several months. In about two weeks from the date of this visit, the color of the unabsorbed lens-substance changed from clear white to a straw-yellow, and the iris had become infiltrated with a muddy-yellow lymph. From this time on there was a steady atrophic change in the iris. The exact date of the commencement of the absorption of the iris I am unable to state, as the patient about this time passed from my observation for some weeks. When I next saw him, however, absorption had occurred in a portion of the upper nasal quadrant of the iris. This atrophic portion steadily widened until in the course of some two months it had included the entire circumference of the structure excepting a small segment in the lower temporal quadrant. At this point a slight adhesion had formed between the pupillary border of the iris and the capsule of the lens, and here, whether in any way due to these adhesions or not I do not know, the iris has failed to atrophy, and is, to all appearances, still normal, while elsewhere it has completely disappeared. The vitreous chamber is at the present time filled with what appears to be a mass of organized lymph. No pus formed at any time in the course of the trouble, nor, as I have said, was there at any time any severe pain.

The retrograde process which occurred I believe to have been due to a cyclitis, though differing in many respects from a typical case of this affection. As to the cause of its onset I am in the dark. It may have been due to the fact that the necessary manipulation of the eye in operating had roused into activity a slumbering affection of the uveal tract. The occurrence of the cataract itself can be explained upon the supposition of the presence of a subacute inflammation in the uveal tract, and, except upon this hypothesis, I am at a loss to explain either the onset of the inflammation, which resulted in the atrophic process, or the causation of the cataract.

I cannot find mention in medical literature of any case that resembles this in its more important features, and am, therefore, forced to the conclusion that it is probably, in most respects, unique.

Case II.—*Primary Sarcoma of the Iris.* I have unfortunately mislaid my notes of this case and the dates given are, in consequence, somewhat inexact but are approximately correct. The patient, Mrs. J. H., aged twenty-three, of Punxatawney, this State, was referred to me by my friend Dr. J. J. Green. Her story as given to me was as follows: Some two years before her visit she had noticed a small growth on the iris of the left eye near the temporal margin and about at the horizontal axis of the eye. This tumor continued to increase in size, and for several months there had been attacks of pain in the eye, increasing in severity and occurring at steadily lessening intervals, until, at the time she came under my charge, in the latter part of February, 1896, she was at no time entirely free from pain in the organ, and at times the suffering was exceedingly severe. Her general health was good, and family and personal history negative.

Inspection of the eye showed the presence of a tumor in the anterior chamber attached to the iris by a base about four millimeters in length. The tumor was about the size of a fair sized split-pea and completely covered the pupillary area. It was dark gray in color and was rather smooth in contour. It was attached about midway between the scleral and pupillary border of the iris on the temporal side. The husband of the patient stated that rather frequent hemorrhages occurred from the tumor into the anterior chamber, and at these times the pain was worse than at other times.

In endeavoring to gain some idea as to the rate at which the tumor was growing, I questioned the patient as to the

length of time she had been blind in the eye, supposing that with the pupillary space covered by the growth, vision must of necessity be wanting. To my surprise, she replied, "I am not blind in the eye; I can see very well with it." Sceptical of this fact, I carefully occluded the sound eye and placed her in front of the test-card, and, to my further surprise, found that her vision was almost full $\frac{1}{1}\frac{0}{0}$. It puzzled me for some time to determine the route by which this vision was obtained, but upon closer inspection I determined that it must be through a small opening in the tumor directly in front of the center of the pupil, which I had before thought was simply a point from which a hemorrhage had occurred. Examination of the eye subsequent to removal proved this supposition to have been correct. The tension of the eye was markedly increased.

I diagnosed the trouble as a probable sarcoma of the iris, mentioning, however, the possibility of its being a gumma, and suggested a short course of mercury and iodid of potassium, holding in reserve the enucleation of the eye if there were no effect from the medicinal treatment. Before arriving at any conclusion in regard to the course she would follow, the patient was, at her own request, referred to my friend Dr. Lippincott for further opinion regarding her case. His opinion was confirmatory of my diagnosis and of the treatment advised. The patient thereupon concluded to be guided by my advice, and I accordingly placed her upon specific treatment, which was continued for a brief time, but without results, except, indeed, that the tumor possibly increased somewhat in size. Satisfied that nothing was to be gained from following out this course further, enucleation was urged and consent for it obtained. The patient was sent to St. Francis' Hospital and the eye removed in April, 1896.

Recovery from the operation was uneventful, and at the end of the second or third week after the operation she returned home, having delayed her departure longer than was necessary in order that she might take home with her an artificial eye. Since her departure, I have heard nothing directly or indirectly from her, and I am therefore in ignorance of the subsequent history of the case. Section of the eye showed the attachment of the tumor to be as previously described. The central opening before mentioned was undoubtedly the pathway by which light entered the eye. The opening, on the corneal side, was exceedingly minute, but on the pupillary side of the tumor it was several times greater in diameter. The tumor was rather firm and pigmented. Hardening of the growth and subsequent microscopic examination at the hands of Dr. Matson showed it to be a small spindle-cell sarcoma.

Primary sarcoma of the iris is a rare affection. I have never before met with a case, the nearest approach to it having been in a man referred to me in 1893 by Dr. Scroggs of Beaver, Pa. In this case there was a tumor several millimeters in diameter lying partly on the cornea and partly on the sclera at the temporal side and in the horizontal plane of the eye. It had, at some time in the past, penetrated from the interior of the eye, as its pedicle was attached to the ciliary body and iris through an opening in the eye at the sclero-corneal limbus. Vision in the eye was almost normal, and in consequence of this fact, the patient refused to consent to removal of the eye, although my diagnosis of sarcoma was confirmed by Dr. Lippincott. At the patient's request, I removed as much of the tumor as it was possible to reach without invading the interior of the eye, after having made plain to him that the growth would almost certainly recur. Microscopic examination of the growth confirmed the diagnosis of sarcoma. Not many weeks elapsed before he was back again with a recurrence of the growth, and this time I positively refused to adopt any other course than that of removal of the eye, which was done at the hospital. Unfortunately, my resident failed to understand my directions for the preservation of the eye and, in consequence, no section of it was obtained.

All the text-books on ophthalmology make mention of primary sarcoma of the iris as an extremely rare occurrence. The Graefe-Saemisch "*Handbuch der Augenheilkunde*" speaks of it as a very unusual condition, of which a few cases have been reported, and Galezowsky of Paris states that he has seen one case in 50,000 cases of eye trouble. In the opinion of the writer, the treatment of sarcoma of the iris should be limited to nothing less than removal of the affected eye. The difficulty of determining whether the disease has affected the structures behind the iris renders any less radical measure a dangerous procedure, and would much increase the risk of recurrence in other organs.

SELECTION.

THE SPREAD OF THE BUBONIC PLAGUE.[1]

BY JAMES CANTLIE, M.B., F.R.C.S.,
LECTURER ON APPLIED ANATOMY, CHARING CROSS HOSPITAL, LONDON; LATE OF HONG KONG, CHINA.

WITHOUT entering into the discussion as to whether or not all epidemics styled "plague" in biblical and medieval literature were of the nature of the bubonic plague of recent times, there can be no doubt that since 1850 the name "plague" has been applied to a definite train of symptoms which are considered to constitute a specific disease. As we proceed, it will be seen how during different outbreaks some one symptom attains a fatal preëminence, but not to the exclusion of others which might at any time assume the death lead, and serve to baptize the disease as "Bubonic," "Hemorrhagic," "Typhoidal," "Pneumonic," and so forth.

Name.—During the latter half of the century the names bestowed on plague have been as follows:

1. In 1856, in Tripoli, it was known as "typhus with glandular swelling." When the disease reached the island of Chios in the same year, it was called "petechial typhus analogous to that of Tripoli."

2. In Mesopotamia, where the disease was prevalent from 1856–85, and possibly up to the present day, the

[1] From the *Medical Press and Circular*, December 30, 1896, and January 6, 1897.

titles "adynamic typhoid fever," and "intermittent fever with glandular swellings," were usual.

3. In Persia, where plague seems to be endemic since 1863, the term "hemorrhagic fever" is used to designate a pestilence which differs from the diseases with which the Persians are familiar,

4. During the years 1877–79, the Russian province of Astrakhan was visited by a disease which was, and is, regarded as plague, but which was variously described as

(*a*) Intermittent fever with buboes.

(*b*) Croupous pneumonia with buboes.

(*c*) Typhus with glandular swellings proving fatal by pneumonia.

(*d*) A peculiar form of mumps.

That all the above-mentioned outbreaks were actually plague, a specific disease, caused by a specific bacillus, will never be known; but the presumptive and clinical evidence is decidedly in favor of their being one and the same disease.

The name "plague," however, is not one which helps us to place the complaint in its proper scientific niche in the category of disease. The word conveys the idea of an unusual disease attacking many persons and attended by a high mortality, but that gives it no scientific value any more than the "Wan-Yik" of the Chinese. Were I to attempt to classify plague, I would place it among the specific fevers, and particularize it under the name of "polyadenitis," and individualize it still further as "malignant polyadenitis."

The term "bubonic," so frequently applied to the disease, is not so appropriate as would at first sight appear. A bubo is essentially the swelling of a gland caused by the entrance of septic materials in the tract of lymphatics over which the gland presides. This cannot be said to obtain in plague, for the so-called buboes of plague can in no sense be regarded as a sympathetic swelling, but merely the outcome of a blood poison.

Definition.—Plague, or malignant polyadenitis, we may define as:—*An acute febrile disease of an intensely fatal nature, characterized by inflammation of the lymphatic glands, marked cerebral and vascular disturbances, and by the presence of a specific bacillus.* It is only since 1894 that we have been able to set forth a definition with precision; it is only since then that we have acquired the knowledge of a definite bacillus by which the disease can be recognized scientifically when ordinary symptoms are in abeyance. In this definition no mention is made of hemorrhage, pneumonia, petechiæ, or carbuncles.

Distribution.—At the present day, plague is confined to Asia; but since 1850 it has made its appearance in Europe, Asia and Africa.

The basin of the Mediterranean and the strip of country which runs parallel to that sea across the Asian continent, from Turkey to China, may be roughly taken as its present belt during the nineteenth century, but the Mediterranean part of the belt has disappeared almost wholly within the present generation. A map of the plague-stricken districts within the last fifty years shows plague astride the Himalayas, with a giant limb reaching on one side the Red Sea, and on the other the shores of the Pacific.

THE CONTINUITY OF PLAGUE OUTBREAKS.

It would appear that in the plague belt the disease is ever active, now in one place, now in another. At times we find it in Arabia, then in Persia, and the Himalayas, and the wave travels eastward over Yunnan and Southern China to the sea. The disease oscillates, now east, now west, but with a fatal precision, making the slow swing of the pendulum of plague within a fairly definite area.

Cause of Plague.—The cause of plague is the advent of a definite bacillus and it is the life-history of this bacillus which must in future occupy the attention of bacteriologists and clinical observers. The proximity of the bacillus is, at the present day, known only by its effect on human beings, and it may be, rats, as well. What fosters it appears to be bad sanitation; once established, time alone will stay its ravages so far as any given epidemic is concerned, but there seems every hope that improved sanitation will check its recurrences.

The *prodromata* of plague may be divided into the remote and the immediate; but I will consider them together. Time and again has it happened that before an outbreak of plague, during a period varying from a few months to several years, buboes with fever have been observed in a more or less epidemic form. In 1877 a variety of plague which infested Astrakhan previous to the outbreak that occurred in 1878, some 150 miles higher up the Volga, was classed as a *pestis minor*. No one died of the disease *per se*, and but few people were confined to bed. From Calcutta comes the news of the discovery of a bacillus allied in every respect to the Kitasato bacillus of true plague, and associated with the variety of plague known as *pestis minor*, which has convinced me that the two are identical. The bacillus is stated not to possess the toxic or virulent properties of the true plague bacillus, but to be similar in all other respects.

THE COMMUNICABILITY OF PLAGUE.

Infection and Contagion.—Direct contagion, that is, transference of the disease from the sick to the healthy by bodily contact, would appear at the first glance to be an element in the transmission of plague. How otherwise can we explain the circumstance that when a case of plague occurs in a house, those dwelling in the house and brought in contact with the sufferer are almost certain to be seized, and not only so, but few, if any, of the other inmates escape? The next in order to be seized by plague are the relatives of the sick and the visitors to the house, who, going to their own homes, set up a fresh focus of infection. Of the community, doctors, clergymen, and attendants who are brought in contact with the sufferers more readily acquire the disease than others who are alien to the family and house. These facts would appear to prove conclusively the contagious nature of plague.

But there is another side to the argument. As long ago as 1835, when plague was epidemic in Egypt, out of *ten French doctors* who attended the sick, only one contracted the disease. Further, we have the well-known case of Bulard during the same outbreak, who, anxious

to prove his contention that the contagious nature of plague was much exaggerated, for two days wore the shirt of a patient who had died of plague, yet Bulard did not contract the disease.

More recently we have the evidence of the Hong Kong epidemic in 1894. None of the European doctors in attendance on the plague patients, in all some fifteen in number, were attacked by plague. Those men were freely exposed in the wards and at *post-mortem* examinations, yet none were infected. Further, none of the British and Italian-born nurses—these were the only two nationalities represented—were attacked by plague during 1894.

But a more interesting fact still, is that none of the Chinese students of the College of Medicine were attacked. For six weeks these men were on duty in turns night and day in the Plague Hospital. Eight of them acted as ward attendants and clerks throughout the period, and were consequently in constant contact with the sick. A racial immunity might be claimed for Europeans, but in face of this fact it cannot hold good. If there be any truth in the acquisition of disease during an epidemic by fear or nervousness, the case of these students refutes the aspersion. They saw that the Europeans escaped, and how terribly their countrymen suffered; they had to contend with the superstitious beliefs of their country, inherited and acquired; they were breathing the same air, eating similar food, hearing daily, hourly even, of the deaths of their friends, relations, and acquaintances; yet none of them succumbed to plague. We have, therefore, two opposite conditions before us, namely, plague entering a house and seizing practically all the inmates; and, on the other hand, doctors, nurses, and native students acting as medical clerks and dressers, escaping completely. Where then lies the truth of the contagious nature of plague?

As usual there is a channel of escape from either of these two extremes of argument. The immunity above related does not extend indefinitely. The Europeans attacked during the 1894 epidemic were chiefly soldiers of the Shropshire Regiment, then stationed in Hong Kong. When plague required sanitary interference beyond the power of the local board, these soldiers came forward and volunteered to help in the work of cleansing and purifying the city. The work assigned to them was of the most laborious order, and they were exposed to a concentration of the contagion, for the field of their duty lay among the dwellings of the poorest class of Chinese who were suffering from plague. Those houses were of the vilest kind of habitation mankind is acquainted with; small, windowless, low-ceilinged, reeking with filth and excretions, they presented infection in the most concentrated form. Further, the soldiers had to use spade and shovel to dig down into the accumulated layers of dirt on the floors of the houses and throw it into the street. It was this occupation, this raising of the dust, more than any other to which is attributed the infection of the soldiers.

The evidence of the subsequent outbreak in Hong Kong in 1896 goes to show that Europeans were much more frequently attacked than in 1894, and two of the nurses in attendance on the sick contracted plague. One of the nurses was a British-born nursing Sister at the Plague Hospital, where she had been for many months. She never was ill until the very end of the epidemic, when she got a sharp attack of the plague from which, however, she fortunately recovered. The Sister believes she was infected by a little child she nursed, and whom she frequently carried about in her arms. The other European nurse was an Italian-born nurse in the convent, who believed she was also infected by carrying about a child sick from plague. The Italian Sister died of the disease. It is interesting to note that the patient from whom the English Sister contracted the disease recovered, whereas the patient of the Italian Sister died. Another Sister in the convent died, presumably infected while nursing her companion. These three deaths seem to point to a contagion rather than infection as the means of spread, for although there were some 600 persons in the convent, none of the other inmates were afflicted.

Gathering this evidence together and trying to focus it we found that the soldiers, who were affected, were exposed, if there is any truth in intensity of contagion at all, to the most concentrated form of the poison. They worked, not in the streets in the open air, but in reeking hovels for several hours together. Intimate and prolonged contact with the contagion in an active condition seems to be the explanation of their *infection*.

The same is to be said of the two European nurses who were seized. Both attributed their ailment to intimate and prolonged *contact* with a generating source, *viz.*, a child carried in the arms, not for a few minutes, but for several hours daily, extending over several days.

That there are, however, degrees of power in the contagium even when emanating from the human body seems to be supported by the nurse and infecting child both recovering in the one instance, and the nurse and infecting child both dying in another. Bulard sleeping in the dead man's shirt proves nothing further than that the plague-infected garment did not *generate* poison of an intensity sufficient to infect. The poison grew every moment more dilute, but a nurse carrying a child throwing off contagium continuously is an exposure of a different stamp.

The immunity of the doctors and Chinese students does not annul the effect of prolonged and intimate contact as being a means of spread; for it must be remembered the doctor *visits* only; he does not stay for a day beside one case as a relative does, nor does he sleep or eat under the same roof as does a nurse. In this way also the immunity of the Chinese students is to be accounted for. They performed their task in a newly-built, commodious, and roomy mat-shed, freely ventilated by being raised three feet from the ground, and its lofty roof constructed so that air swept across between the side walls and the roof, with large apertures in the roof itself, the chance of contracting the disease from so diluted a form was reduced to a minimum.

The practical lesson to be learnt from these statements is that free ventilation and attention to hygienic rules lessen the chance of contracting the disease to a very great extent, not only for Europeans, but also for natives; but that all are liable to contract the disease when, either

from the calls of duty or wilful neglect, exposure is extreme.

What has been termed the "MIASMATIC" method of infection bears distinctly upon the maintenance and epidemicity of plague. Miasmatic infection implies a soil-bred disease; a disease existing as we assume malaria does in the earth itself, in the water, or in some particular form of fermenting or decomposing material in which the germ finds a nidus. In a neighborhood so infected, the disease is endemic, as manifested by the fact that again and again the disease recurs; that after a few months of seemingly complete disappearance the disease crops up and runs a more or less severe course.

Rats.—Rats are known to be infected and die of the disease. Moreover, they are a great source of infection indirectly to man by infecting the water supply.

Snakes.—Dr. Thomson remarks in the *British Medical Journal*, September 8th, 1895, page 560: "Moreover, when rats are thus dying, dead snakes also are said to be found about the site in unusual numbers." Later on he remarks: "The snakes eat the rats."

Dogs.—Dr. Mouchard, in the *Chinese Customs' Medical Gazette*, in the forty-seventh and forty-eighth issues, remarks that dogs died during an epidemic of plague. He ascribes it to the dogs eating the flesh of human beings or any other animal dead of plague.

Pigs.—It is even more important to ascertain whether or no the pig is infected. Pork is largely consumed by Chinese; and, moreover, Europeans in the East seldom or never eat Chinese-fed pork. The Chinese died of plague whilst the Europeans enjoyed an immunity from the disease; nothing seems more conclusive than that pork was the infecting food. Moreover, most of the pork brought to the Hong Kong market comes from Pakhoi, a town where plague has been endemic for years.

The first point to be settled is, Does the pig suffer? *Not as a rule.* The pigs from Pakhoi showed no falling off in numbers, and they were not sickly; the former condition would have obtained had plague thinned their numbers in Pakhoi, and the latter would have been found out when they reached Hong Kong, where careful inspection of all food supplies is made.

Dr. Mouchard writes: "We saw on some roads dogs and pigs feeding undisturbed on corpses which no one cared to bury. These animals fell victims to their greed and succumbed to the scourge."

Further, plague has been produced in the pig experimentally, all of which goes to prove that pigs die of plague after consumption of corpses dead from plague and inoculation; but that pigs are not primarily liable to plague in the same way as rats and pigeons, seems conclusively shown.

It will be seen at once that the infection of birds would render the possibility of the rapid spread of contagion and the appearance of the plague in isolated districts easily explicable. It is not comfortable news that we may have a winged distribution of plague.

To sum up our knowledge we find:

1. That the rat is the animal most liable to be attacked.

2. That rats suffering from, or dead of, plague may infect other animals which consume them.

3. That rats are always affected by a disease similar to plague at the same time that man suffers.

INCUBATION.

The time intervening between exposure to and the development of plague is three to six days as the period of incubation, but the evidence within the last few weeks from Calcutta renders the period of incubation of ambulatory plague uncertain.

Invasion.—The onset of the disease in malignant polyadenitis is known to be usually sudden and severe. The patient is seized with headache, fever and prostration, and compelled straightway to seek his bed. In a few hours or a few days a swollen gland develops, and the disease runs its course. But we have on record many cases where high fever existed and the patient did not even feel ill; or where a gland swelled up with no general feverish state. Such cases are sufficient to show that fever or plague may exist and the patient not be aware of it; and the glands may be affected for a fortnight before the disease declares itself in the usual way, by headache, fever and prostration.

The onset of the disease, therefore, even during a plague epidemic, may not be so definite as we should like to believe, and as yet we have no charts recording the condition of the patient between the time of exposure and the invasion.

The Bacillus.—The bacteriology of plague began by the advent of Kitasato from Tokio during the Hong Kong epidemic of 1894. On June 14, 1894, Kitasato demonstrated the bacillus, which was confirmed afterward by Dr. Yersin, of the Pasteur Institute, in Saigon, working in an independent manner. The bacillus has been variously described as (1) a diplococcus; (2) diplococcus enclosed in a delicate capsule; (3) a short bacillus with the ends somewhat rounded and a clear space or band in the center. Professor Woodhead writes: "The size varies considerably according to the staining method employed, the organism appearing rather smaller in the watery gentian-violet solution than in the glycerin-fuchsin solution. It is plain that the size of the capsule and its staining capacity vary very considerably; and it is quite possible that this appearance of a capsule is like that which is sometimes met with around the bacillus of anthrax stained in special solutions in that it may be simply a refraction from the albumin from the constricted bacillus, due to the drying and other processes of preparation." In the figures drawn by Woodhead an organism was met with in some specimens which seems to indicate a development after death. The last statement may be the most important of all, and its confirmation will be anxiously looked for during the present outbreak in India. It may be the first step toward a knowledge of the life-history of the bacillus in the same manner as the flagella of the *plasmodium malariæ* are found to develop in the field of the microscope some half-hour after removal from the body.

THE ACCOMPANIMENTS OF PLAGUE.

Climatic.—The weather does not escape blame for a share in the presence of plague when it rages in the midst of a community. Be it dry, the drought is mentioned as a cause; be it rain, the floods which ensue are held to have damaged the crops, and the grain supply is spoiled, or the miasm resulting from the subsidence of the swollen streams is connected with the outbreak. In Southeast China the epidemic of plague developed at the end of a prolonged and exceptionally dry season. The rainfall was so deficient that most of the wells throughout the district were exhausted, and the crops suffered severely.

Without driving the argument of drought too deeply home, it must, however, be observed that in Bombay we find a similar condition of things before the present outbreak. The rainfall over a wide area of country has been so greatly deficient that wide-spread famine has followed.

Rain.—In Hong Kong it was hoped, in 1894, that, with the advent of rain, the epidemic would abate. The rains delayed their onset until well on in May, by which time the epidemic had got a hold in the town. With the rains came an accession, a marked accession, of the number of plague cases. The flushing of the drains and gutters, the replenishing of the wells with a plentiful supply of water was attended by an increase in the outbreak.

Before referring this positively to the effect of procuring a more moist nidus for the bacillus to develop in, the effect of rain on the habits of the people has to be noticed. In all warm climates a number of the male portion of the inhabitants sleep out of doors, on the roof, in the street, or in verandahs. The effect of rain is to drive all such sleepers within the house, to shut the windows and doors, and to generate all the evils of overcrowding.

Heat and Cold.—In Canton the plague commenced when the temperature averaged about 60° F., and continued when the average daily temperature reached 90°F. Further, it must be noted, that the disease disappeared when heat and moisture were about 90° throughout the district, so that with regard to the common statement that it thrives best at a temperature between 80° and 85° F., it must not be forgotten that, while thriving, it also disappears at the same temperature. It dies out when the conditions which we believe to be suitable for its propagation, heat and moisture, are at their best.

Overcrowding.—The argument of overcrowding might be at once set aside by the sweeping statement that just as plague flourishes in crowded cities so likewise it flourishes in barren deserts where the population is sparse in the extreme. An analogous disease, typhus, behaves in well-nigh the same way, and typhus is looked upon as the direct outcome of overcrowding. Now overcrowding may take place in a country house as readily as in a town house, and the poorer the country the greater the overcrowding. Typhus prevails in isolated houses on the west coast of Galway, Ireland, where the air around is of the purest. But eight or ten people or more in one room, not only sleeping there for warmth, but residing there well-nigh all day when the weather is inclement in winter, will foster any disease that foul air is capable of producing. As with typhus, so with plague.

Poverty.—Plague is ever associated with scarcity and want. Sometimes it is famine caused by the destruction of crops by floods; sometimes by drought; but from whatever cause, plague and scarcity of food are frequently allied. Not only is the grain scarce, but it has often been remarked upon that it is bad, musty, covered may be by blue mold and fermented. The two conditions are to each other as cause and effect. The grain is gathered before it is ripe, owing to the people's necessity, and the unripe grain not only yields insufficient nourishment, but it is apt to undergo fermentation and be attacked by vegetable parasites.

In India, at the present moment, a serious scarcity prevails and famine threatens. The prolonged drought is the cause of failure of crops, and, moreover, the consumption of diseased grain is unheard of; but the combination which also means overcrowding of houses, must be a factor, if not the chief factor, in the propagation of the disease.

Sanitary Conditions.—The preceding remarks prepare the way for the recognition of possible sanitary evils and neglects as accompaniments of plague.

Chinese towns are at all times ready to generate any filth disease, and Hong Kong itself is but little better. The city was hastily built about fifty years ago, when the sudden inroad of tens of thousands of Chinese sought occupation and habitation under the British rule. From that rush of people and feverish haste to build without proper control, the city never recovered, and to this day presents sanitary aspects of the most flagrant description.

MEDICAL PROGRESS.

The Normal Male Urethra.—JUDASSOHN and DREYSEL report results of their investigations of the normal urethra (*Archiv. f. Dermatol. u. Syph.*, Bd. xxxiv, p. 349). They found the capacity of the anterior urethra to be much greater than it is ordinarily given, depending of course on the power of resistance in the musculus compressor urethræ. With an irrigator held at a height of 80 c.m. the average capacity was found to be 7.8 c.cm.; at 130 cm., 10.65 c.cm.; at 200 cm., 12.9 c.cm. The average quantity which could be injected with a syringe was 11.8 c.cm. The greatest capacity found in any case was 22 c.cm.—a little over 5 drams. It follows from this investigation that in order to accomplish the maximal distension of the urethra, which is so important in gonorrhea, the irrigator should be hung very high.

Of the capacity of the posterior urethra one cannot really speak, for the most minute quantity of fluid injected into it flows at once in the direction of the least resistance, that is, in most cases, into the bladder.

Another interesting point which the authors determined is the reaction of the mucous membrane of the urethra which they found to be constantly alkaline, even after the passage of very acid urine. An occasional exception was found in the fossa navicularis. However as gonococci grow upon both acid and alkaline media this point has no evident practical bearing.

Injuries of the Liver.—The *Rev. de Chirurgie*, October, 1896, contains a complete article upon injuries of the liver, by TERRIER and AUVRAY. The section on diagnosis is well worth repeating. In many cases complicating injuries will obscure the hepatic symptoms so that a diagnosis is impossible, but in many other cases where there is a contusion in the neighborhood of the liver the physician, by carefully locating the pain, can tell whether the injury is simply of the abdominal wall, or extends deeper into the liver itself. If the liver is injured there is a feeling of weight in the right hypochondrium, radiating toward the epigastrium, umbilicus, shoulder, etc. It is a deep pain, not very quick, nor excitable. Pain resulting from a contusion of the abdominal wall is more superficial, and disappears in repose, to recur violently at the least muscular contraction. It is also accompanied by ecchymoses. These may of course be present with injuries of the liver, but not necessarily so.

Besides these local symptoms there are others which are equally valuable in injuries of the liver, such as internal hemorrhage, jaundice, and urine containing sugar, or albumin, or bile. With reference to prognosis, ruptures of the liver, occurring among 750 cases of injury, have hitherto given a mortality of eighty-six per cent., while the mortality for the whole series of injuries was only sixty-four per cent. These figures have recently been much improved by an early exploratory incision and rigid aseptic treatment, so that Terrier and Auvray for their own forty-six cases obtained a mortality of only twenty-eight per cent.

Tuberculosis of the Knee.—The *Gazette Hebdomadaire de Médecine et de Chirurgie* recently contained a review of a work by Koenig upon Tuberculosis of the Knee, which brings out some interesting points concerning this disease. During a period of eighteen years, from 1875 to 1893, Koenig observed and treated 720 cases of tubercular disease of the knee joint—so that his statistics are of considerable value. Of this number 427 were males and 293 females; the right knee was affected 364 times, the left 326, both knees 13, and in 17 cases the location was not noted. In 691 cases the starting point of the disease was observed. In 281 or 44.5 per cent. it began in the bony structure of the joint, and in 351 or 55.5 per cent. the synovial membrane was the primary seat.

Of the bones, the tibia was most frequently involved, *viz.*, 107 times, the femur next, 53 times, the patella 33 times, and in 48 cases all of the bones were affected simultaneously.

The plans of treatment adopted were rest in a proper position, extension, injections of 5 per cent. solutions of carbolic acid, iodoform, glycerin and Koch's tuberculin, and the various operations of arthrectomy, excision and amputation. His conclusions based on this large number of cases are:

1st. That the majority of cases will recover under conservative treatment, but only a few will have a considerable range of motion, and a large proportion will recover with ankylosis in a flexed position.

2d. That no definite prognosis as to the time of cure or the result can be given in the beginning.

3d. That where a case is rebellious, does not improve under conservative treatment, and there is a strong probability of ankylosis in the end, an operation should be done.

Among children arthrectomy is the operation of choice; in adults, excision.

Tuberculosis in other localities is not a contraindication to an operation.

He condemns early amputation in these cases, but also opposes those who wait until the patient has become exhausted by pain and prolonged suppuration.

Menstruation and Conception During Lactation.—REMFRY, by investigation of 900 nursing mothers (*Rev. Intern. de Méd. et de la Chir.*, 1896, No. 5), found that in only 57 per cent. was there absolute amenorrhea. In 20 per cent. menstruation was normal, while 43 per cent. menstruated irregularly. Conception during lactation was also common, especially with the menstruating mothers, *viz.*, 60 per cent. Among those who did not menstruate at all, only 6 per cent. conceived while nursing.

THERAPEUTIC NOTES.

Urethritis: Treatment with Airol.—LEQUEN and LÉVY (*La Presse Médical*, 1896, p. 595) report favorably upon the use of a solution of this remedy as an injection in acute and chronic gonorrheal urethritis.

The remedy, which is a combination of iodid of bismuth and gallic acid, resembles dermatol, but contains more iodid and less bismuth oxid, and is an odorless, tasteless powder, unchanged by light and stable in dry air.

Applied to moist surfaces, it decomposes into its constituent parts, and thus acts as a dessicant and antiseptic.

While insoluble in ordinary media, it forms in the following combination an emulsion which has been used by the writers:

Airol,	2 grms.
Glycerin, Aqua dest., aa.	10 grms.

After washing the urethra with a four-per-cent. aqueous solution of boric acid, an injection is made once daily of 6 cc. of the emulsion.

Treatment for Vertigo.—The following remedy for vertigo, when occurring in arterio-sclerosis, is recommended in the *Rev. de Therapeut. Méd.-Chir.*, November 1, 1896:

Ergotin,	10 centi gr.
Extract of Calabor Bran,	2 "
" " Gentian,	q.s.

For a pill. From 1 to 20 are to be taken daily, increasing the dose according to the toleration of the patient.

To Remove Tattoo-marks.—MINIME (*Monatsheft. für pract. Dermatol.*, November 1, 1896) states that in order to remove tattoo-marks the skin is to be washed with a concentrated solution of tannin, pricked with needles. Into the punctures is thrust a sharp-pointed stick of silver nitrate, under considerable pain. Silver tannate is formed in the skin and the tattoo pigment gradually eliminated.

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SATURDAY, JANUARY 23, 1897.

THE PLAGUE IN INDIA.

THE nature and characteristics of the bubonic plague now raging in India are interestingly described in this week's issue of the NEWS by Dr. Cantlie of London, who speaks from personal knowledge and observation. The present outbreak is intensified and made more horrible from the fact that it has appeared in the midst of a widespread famine. The horrors of the situation can with difficulty be imagined. Hundreds are dying daily, and the panic-stricken people are deserting their homes and fleeing from the plague-infected cities. Already a half million are said to have left Bombay. This migration is likely to spread the infection throughout the countries of Western Asia. Add to this process of dissemination the approaching annual pilgrimage to Mecca, and there is presented a combination that becomes appalling.

As a means of propagating disease, these gatherings of pilgrims are the most potent factors known to the civilized world. A few pilgrims infected with cholera germs, by bathing in the sacred pools from which all drink as a sacred rite, have been the means of spreading cholera over remarkably wide regions of country. If to this scourge, which is endemic in the Moslem realms, there be added the destructive forces of the bubonic plague, there will doubtless eventuate a mortality that will surpass all known records. How effectually this may be stamped out or restricted by sanitary enactments and quarantine supervision becomes, therefore, a vital question. At the time of the cholera epidemic in 1894, a system of quarantine was organized by international agreement which proved most efficient and satisfactory in preventing the disease from passing the gateway of the Suez Canal.

This system consisted in establishing quarantine stations at both ends of the Red Sea—one at Camaran to inspect all ships bound to the eastward, and another at Tor, near the entrance of the Suez Canal. At Tor, all ships containing pilgrims from Mecca were obliged to disembark their passengers. These were then arranged in groups, according to their destination, and carefully inspected. Those found sick were placed in hospital, and the members of the group in which they were discovered isolated from the others and kept under prolonged observation. In the meantime, all the passengers were thoroughly bathed, their clothes and luggage subjected to disinfection by heat. The ship was fumigated and scrubbed with germicides. The passengers were then reëmbarked and the vessel allowed to proceed on her journey as far as Suez, where she was again inspected by quarantine authorities, and detained if found infected. To prevent the escape of suspects into the interior during their stay at Tor, a cordon of soldiers was stationed around the entire encampment.

Fortunately, therefore, the international quarantine has this plant established and ready for active and efficient work. Dr. Doty, the Health Officer of New York, has recently returned from a tour of inspection, and he assures us that the system is so complete as to give every certainty of blocking all progress of disease at this point. To make assurance doubly sure, he has inspectors at various points on the Mediterranean to keep him informed of all possible sources of infection. This, with the magnificent quarantine regulation of our ports, allays all possible fear of any invasion along our Atlantic seaboard. As the western limits of this plague are receding in successive outbreaks, and the eastern limits are advancing, it is

quite possible that the most imminent danger threatens the Pacific Coast, and quarantine regulations may require serious attention there.

THE SIGNIFICANCE OF RENAL PAIN.

PAIN in the neighborhood of the kidney is often very severe, and exists as the chief symptom of many abnormal conditions in this organ. Very often an examination of the urine passed at a time closely associated with the attack will reveal pus, an excess of irritating crystals or other evidence of renal mischief, as blood; but in other cases the urine gives far less guidance in diagnosis than could be desired. Because of the severity of these pains and because the severity and degree of disease may necessitate operative interference their diagnostic value is great, and it behooves the physician to call to mind, in their presence, their various possible causes. Of course, renal colic due to the passage of a calculus from the pelvis of the kidney through the ureter, will suggest itself as the most probable cause of the attack. The history of previous attacks of a similar character, the radiation of the pain downward into the groin and testicle, or to the end of the penis, aid in deciding that a calculus is passing; while the possible presence of blood in the urine, the irritable bladder and the exquisite agony in the paroxysm, in contrast to the remissions, and the sudden onset still further point to this condition.

These symptoms are not, however, always present in sufficient degree or in association to make the diagnosis easy, and the absence of one prominent sign may seriously impair its certainty. Under these circumstances, the physician at once endeavors to ascertain the other states of the renal neighborhood, and recalls the fact that somewhat similar pains arise from pyelitis with possible nephritic abscess, from neuralgia of the kidney or the tissues near by, from nerve pains due to spinal caries or irritation, and more rarely from tumors adjacent to or in the gland, or from aneurism of vessels, as for example, aneurism of one of the branches of the mesenteric artery. Nor are these all, for, as additional possibilities, a stone or stones imbedded in the renal substance may be found, or excessive deposits of oxalic acid or other crystals, manifesting themselves in gouty kidney, or, finally, cardiac valvular disease, more commonly of the aortic valves; while the aching of the kidney is ascribed to injury, and is most commonly met with in young females who endeavor while wearing corsets to take violent physical exercise.

The presence of pyelitis rarely develops great pain, and the appearances of the urine point clearly to the cause of the discomfort, though if the attacks be sudden in onset the cause may be calculus in the pelvis of the kidney, surrounded by septic changes.

The failure of health and the possible febrile movements and chills still further point to pyelitis. So too, nephritic abscess is accompanied by so much systemic disturbance in many cases as to make the diagnosis clear. The presence of spinal tenderness on pressure or motion in the dorsal or lumbar regions, and the history of spinal irritation or disease, decides this as the cause of the pain; but the discovery of aneurism of any of the abdominal vessels may be impossible, unless it be large enough to manifest itself through the viscera or abdominal wall on palpation. The diagnosis of stone imbedded in the kidney is very difficult and uncertain, but the onset of an attack of renal pain arising from oxaluria or an attack of gout is usually bilateral, and is associated with a scanty urine of high specific gravity, and with much lumbar soreness. A gouty history or that of having eaten large amounts of oxalic acid-bearing foods, such as pears, tomatoes, and cabbage, may be recognized as the predisposing causes of attack.

Nearly forty years ago, Habershon called attention to the fact that aortic valvular disease often caused pain to be radiated into the hypochondrium, and within the last year, Ralfe has, in the Proceedings of the Medical Society of London, detailed the possibility of aching kidney being due to unrecognized trauma. He has met with young women who, by wearing tight corsets while playing tennis or other violent games, have so bruised the right kidney by some sudden and violent movement as to suffer seriously for days afterward. Again, Ralfe asserts that fairly violent renal pain sometimes arises in cases that, by reason of obstinate constipation, have accumulated in the colon hard scybalous masses which, by their pressure, produce reflex irritation and renal agony. As an illustration of the fact that Habershon was correct in stating that valvular disease sometimes causes renal pain, Ralfe asserts that on one occasion no less a person than the late Dr. Murchison called at his house with a specimen of his own urine, voided

after an attack of severe renal pain which had come on at night, and which resembled true renal colic so closely that Murchison, who was a sufferer from aortic disease, was confident that he had had renal colic. A reminder from Ralfe of Habershon's statement, and an examination of the urine, soon convinced Murchison of his mistake.

In a similar paper read by Hurry Fenwick before the same society, this gentleman presented additional diagnostic information. He asserts that there are two great groups of renal stones, and that in each class characteristic pain may be felt. In the cortical stones the pain is fixed and continuous, and is liable to exacerbation on movement, but does not depend so much upon changes in the diet. On the other hand, pelvic stones cause obstruction and colic, the pain radiating down into the groin and testicle, while the urine becomes bloody, purulent, or scanty. Of course these cases are not in life divided by any strict line such as we have named; the more cortical the more characteristic the pain, whereas if lower down there may be the symptoms usually seen when the stone is actually pelvic.

Fenwick also believes that the posture of the patient in bed is typical. In nine out of twelve cases, his patients could sleep only on the affected side. Cortical stones, in his opinion, never cease to give discomfort, but pelvic stones may become imbedded, and the patient go for long periods of time free from any discomfort.

INSANE CONVICTS IN PHILADELPHIA.

IT has long been more than a suspicion in the minds of many physicians of Philadelphia that a larger number of insane convicts are incarcerated in the Eastern Penitentiary than is generally supposed. The subject was brought prominently before the public last month by the action of one of the city judges, who appointed a commission to investigate the mental condition of some of these alleged criminal insane. This commission, composed of men of high standing in the professions of medicine and law, has just made a circumstantial and conservative report. The tone of this report is admirable and highly commendable because it shows that the commission as a body carefully avoided the influence of the somewhat sensational literature which the press, and even the inspectors of the penitentiary, and the judge himself, issued upon the question. Much of this literature, including the brilliant polemics between the honorable judge on the one hand and the irate inspectors on the other, unfortunately cannot be noticed here, but the report of the commission, because both of the expert knowledge shown by its members and of the truly judicial tone that characterizes it, presents us with certain lucid and reliable conclusions.

The method of investigation was direct and searching. The commission in a body, attended by a secretary, went to the convicts in their cells, and made minute and scientific examinations into their mental status. It should be said right here that the commission was not charged with an examination of all the convicts in this immense jail. Under the law of the state it was acting by instruction of a judge of one of the counties only, and had authority only to examine alleged lunatics who had been sentenced from that particular county. As the penitentiary is a state institution, receiving convicts from many counties, the jurisdiction of the commission was too distinctively limited to permit their report to be received as a complete record of the actual number of criminal insane at this time imprisoned within its walls.

The conclusions of the commission are briefly as follows: Of eight alleged insane convicts, the record of whose mental and physical symptoms is given in detail, five should be classed as insane, two as not insane, and one as of doubtful mental state. The five classed as insane and the one of doubtful mental state are proper subjects for treatment in a hospital for the insane. Two of these belong to the dangerous class of insane criminals, and would be best treated in an institution especially provided for the criminal insane. The commission, however, is forced to regret that no such hospital has been provided by the State of Pennsylvania.

This, in a nutshell, is the outcome thus far of what promised in the beginning to be something of a scandal. The findings of the commission are not startling, but they are, or should be, disquieting to the public conscience of the state. Certain practical deductions can be drawn which may help to focus light upon the proper points.

First, we are somewhat disappointed that the commission did not venture an opinion upon the subject

of the influence of solitary confinement in causing or promoting insanity. The members of the commission possibly felt that this subject was too large to be based upon the few data which they had obtained. We confess that we do not find much in their report to warrant a dogmatic opinion that solitary confinement engenders insanity. The types of insanity observed by them were evidently the conventional forms of delusional paranoia, with deterioration, which are not uncommon in the criminal insane. This form of insanity is possibly promoted by any system of imprisonment, and until accurate statistics, by expert observers, are made, for comparison, it might be rankly unjust to allege that the cellular system is responsible for more of it than the congregate system. We have heard a most reliable and skilled alienist, of wide observation upon the criminal insane, say that insanity is so closely allied to criminality that it is almost impossible as yet to gauge accurately the effect of imprisonment, of any kind, in its production.

Secondly, the report of the commission seems to imply, although it does not distinctly say, that the authorities of the penitentiary have not been sufficiently alive to their responsibilities under the law of the state. The act of the Assembly of Pennsylvania directs that whenever any person detained in any prison is insane it shall be the duty of the judge of the court under whose order the person is detained, to direct, upon application, an inquiry by commission or otherwise, with notice to the Commission on Lunacy; and if the judge is thus satisfied that such prisoner requires treatment in a hospital for the insane, he shall direct the removal of said prisoner to a state hospital. Now, it is very evident that in such a close corporation as the Eastern Penitentiary such application to a judge lies almost wholly in the discretion of the authorities of the jail. This discretionary power was evidently not properly used in the case of the penitentiary in Philadelphia. To judge from the newspaper literature, and the utterances of the warden and inspectors themselves, these officials have been notoriously ignorant and headstrong in the exercise of their somewhat despotic power. It is even alleged that they do not hesitate to make snap diagnoses of simulated insanity, and to reflect adversely upon the value of expert testimony. These peculiarities have brought upon them a well-deserved share of public criticism, which we hope will awaken in them a sense of their public responsibilities.

Finally, the law of Pennsylvania is evidently radically defective in one essential. It directs that insane prisoners shall be removed from the prisons, but it provides no proper hospital to which to remove them. This defect is clearly pointed out by the judge of Bucks County, one of the contiguous counties to Philadelphia. He, too, appointed a commission in December to report upon the mental state of several prisoners in the Eastern Penitentiary from that county. In his instructions to this commission the learned judge called attention to the grave responsibility of removing dangerous insane criminals from a penitentiary, where they are safely detained, to a state hospital for ordinary non-criminal insane, where they cannot be safely kept. He wisely says that it is a serious question whether it is safe, wise, or proper, to commit such criminal lunatics to a hospital in which they must be detained along with the innocent. This criticism, of course, points to but one remedy — the establishment in Pennsylvania of a special hospital for the criminal insane. In this respect Pennsylvania is still backward, although not more so than many other states, but by reason of her wealth and greatness her defect is more conspicuous. We confess that we do not see what good result can come from the present agitation, unless it be the establishment of such a hospital. We believe that such will ultimately be the result, and that too much credit cannot be given to the humane judge and the enlightened and conscientious members of the commission who have taken the initiative in this important step.

ECHOES AND NEWS.

Expert Witnesses.—The Minnesota Medical Association is agitating the question of legalized expert witnesses.

Sir Joseph Lister's Peerage a Life One Only.—Sir Joseph has no direct male descendant. Lady Lister, who was a daughter of the late Mr. Syme, of Edinburgh, died a few years ago without any issue.

Prizes of the Academie des Sciences.—At the annual public meeting held in Paris, December 21, 1896, the Montyon prize of $15,000 was divided among Professor S. Laskowski, of Geneva (Atlas of Human Anatomy); M. Legrain (Researches on Alcoholism), and MM. Imbert

and Bertin-Sans, of Montpelier, and Oudin and Barthilomy, of Paris (Application of Skiagraphy to Medical Science).

Portrait of Mr. Herbert Spencer.—In response to a letter signed by a large number of eminent Englishmen, Mr. Spencer has consented to allow his portrait to be painted and presented to the nation.

Resignation of Professor Chandler.—Prof. Charles F. Chandler has retired from the Professorship of Chemistry and Medical Jurisprudence in the College of Physicians and Surgeons, but retains the Professorship of Chemistry in Columbia University.

The Telephone in Practice.—A young physician of Illinois has built a private telephone line connecting his office with the residences of all his country patients. When he is older, we predict that his love for the insistent jingle of the telephone-bell will be less ardent.

Appendicitis on the Left Side.—In the case of a lad who recently died in Danbury, Conn., the usual symptoms of appendicular disease were present, but all signs were referred to the left side of the abdomen. An autopsy revealed the anomaly of a more or less complete transposition of all of the viscera and a general septic peritonitis the result of perforation.

A Woman as Presiding Officer in the British Medical Association.—The East Anglian Branch of the British Medical Association has placed Mrs. Garret Anderson in its Presidential chair. The triumphant march of women doctors into the ranks and official positions of this association has been steady and determined, and the end is not yet.

Pasteur Institutes in Russia.—There are seven institutes in Russia in active operation for the treatment of hydrophobia. The total number of patients treated between 1886 and 1892 was 14,369, of whom 265, or 1.84 per cent. died. More than 9,000 of these were bitten by dogs, and of these, 0.79 per cent. died, while 621 were bitten by wolves, and of these 16.26 per cent. died.

Total Extirpation of the Bladder.—On the 5th of this month Dr. Tuffier presented a man before the Academy of Medicine, Paris, from whom, on October 10th, he had performed complete exeresis. The patient suffered from a diffuse tumor of the bladder. By the use of a tube-syphon and hypogastric receptacle for the urine, he was thus able to return to his work much improved in his general health.

One Million Dollars for a Hospital.—Mr. J. Pierpont Morgan has offered to build a new home for the New York Lying-in Hospital at Seventeenth street and Second Avenue. He is ready to donate $1,000,000 for this purpose as soon as the management can show an endowment sufficient to carry on the work of the hospital. Mr. Duer, president of the Board of Governors, is confident that no difficulty will be found in complying with the terms of Mr. Morgan's offer.

Board of Surgeons for Brooklyn.—A bill has been introduced in the Assembly at Albany providing that after May 1, 1897, there shall be a Board of Physicians and Surgeons in Brooklyn, to be appointed by the Mayor, to perform the services now performed by the surgeons connected with the city department. The board is to consist of a chairman and nine competent physicians and surgeons. The chairman is to receive a salary of $2,500 and the other members $2,000 each.

The Pennsylvania Society for the Prevention of Tuberculosis.—It is proposed by the members of this organization to build a sanitarium for the treatment of consumptives upon the Blue Ridge slope in Luzerne county, Penn. A tract of six hundred acres of land near Glen Summit has been acquired and upon this one of five pavilions will be erected as soon as the sum of $15,000 has been raised by private subscription. A bill will be introduced asking the State Legislature to appropriate $100,000 every second year toward the enterprise.

The Use of the Incubator.—Dr. L. Fürst, of Leipzig, says that in April, 1890, he induced labor at six months and one week in a lady suffering from edema of legs and face, her urine containing sufficient albumin to make it solid on boiling. She escaped eclampsia and recovered completely. The infant, a girl, weighed, when born, between two and three pounds. She was at once placed in one of Hearson's Thermostatic Nurses (an incubator), and was thus reared, and she is now a remarkably fine and intelligent child for her age.

Dr. Abbott in the Philadelphia Board of Health.—Director Riter has named Dr. A. C. Abbott, of the Laboratory of Hygiene, University of Pennsylvania, as chief of the bacteriological division of the Philadelphia Bureau of Health, in place of Dr. B. Meade Bolton, resigned. Dr. Abbott's contributions to scientific literature have been numerous, among the more prominent being "The Relation Between Water Supplies and Epidemics," "Typhoid Fever in Lower Animals," "Report on the Koch Treatment of Tuberculosis at Berlin," he having been sent as a representative of the Johns Hopkins Hospital to Berlin to obtain the materials for this report; "The Etiology of Diphtheria" and "The Principles of Bacteriology," a text book now in its third edition.

The Fire at Bellevue Hospital Medical College.—A fire broke out early Wednesday morning, January 20th, in the rear of the upper story of the College building. The origin of it is attributed to the electric light wire. The dissecting room was entirely destroyed, as well as the story below, and the entire building flooded with water. The records of the College were saved and the contents of the chemical and physiological laboratories escaped serious damage. Fortunately most of the dissecting work had been completed by the members of the graduating class. The regular lectures were continued without interruption at the Carnegie Laboratory and the ampitheater of Bellevue Hospital. The unusually large class of students that is in attendance this year will therefore not be seriously in-

convenienced. It is expected that the building will be promptly restored and enlarged.

Advertising by Medical Men.—*The Medical Press and Circular* says: "Within recent years, and more especially of late, a particularly pernicious form of advertising has arisen. We allude to the custom of forwarding purely medical works for review to lay newspapers. From Fellows and even officers of the Royal College of Physicians, this special unethical procedure has apparently met with no remonstrance. Of course, the authors will probably reply that they have nothing to do with any arrangements which their publishers might make in the interests of the sale of the work. But most persons are now aware that an excuse of this sort has no foundation in fact. It would only be necessary for an author to intimate to his publisher the desire that no copies of his book should be sent for review outside of the ordinary professional channels, and it cannot be doubted for a moment that the wish would be attended to and carried out."

CORRESPONDENCE.

A CASE OF VIRGINAL GONORRHEAL VAGINITIS.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: A. B., æt. twenty-one, school-teacher, evidently of an investigating turn of mind, consulted me in November last concerning a violent itching in her genitalia, which had been growing worse for a week past, and was now unbearable.

Examination, which was submitted to most reluctantly, revealed the mucous membrane of the vulva and hymen red, swollen, and covered with a thick whitish mucous discharge, a specimen of which, when mounted and stained, revealed under the microscope gonococci in abundance.

The hymen was intact, and barely permitted the insertion of my finger. The vagina was hot, swollen, tender, and bathed in abundant mucous discharge, showing a deep-seated infection; on irrigation, great flakes of white mucous discharge were washed out.

She was informed of her condition and put on the usual treatment.

She denied any improprieties whatever, and said, among other things, in answer to my inquiries, that two weeks before, while visiting a friend, she saw her syringe, and became possessed with a desire to use it, never having seen or used one before, "just to see how the thing worked."

Her friend instructed her in the art of using the instrument, although she had been using it for some time past with a solution of "acetate of lead and alum." This friendly instruction would seem to account for the infection.

The above may be of interest on account of the peculiarity of the manner of infection.

Yours truly,

LEEDOM SHARP, M.D.

1335 PINE STREET,
Philadelphia, December 29, 1896.

A CASE OF MUCO-MEMBRANOUS ENTERITIS, WITH DEPOSIT OF INTESTINAL SAND.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: In THE MEDICAL NEWS of August 29, 1896, under "Medical Progress," appeared a description of two cases of "intestinal sand and muco-membranous enteritis," reported first by Mathieu and Richard (*Gaz. hebdom. de Méd. et de Chirurg.*, May 28, 1896).

Since reading this report I have had a similar case in my practice. The woman, æt. thirty-four years, gives a history of having had a pelvic abscess seven years ago, which finally ruptured into the bowel, and has continued discharging intermittently and in diminishing quantities ever since. On dilating the sphincter ani a small quantity of pus almost invariably escapes. This pus was examined by a bacteriologist and found to contain only staphylococci.

The patient has suffered from a chronic muco-membranous enteritis for the past five years, with alternating diarrhea and constipation. About one year ago she first noticed the passage of quantities of small sand-like masses, which she likened to grains of pepper. These masses were freely soluble in nitric acid, and under the microscope were found to consist principally of phosphate of lime, both crystalline and amorphous. The probable sequence of events in this case was as follows: The continued passage of acrid pus over the intestinal mucous membrane gave rise to inflammatory changes in it and in the glandular structures, which resulted in the development of muco-enteritis, and the muco-enteritis, in its turn, seems to be the cause of the production of the lime-salts.

The exact mode of production of these lime-salts is not well understood, but it is possible that they may be a pathological product of the mucous glands of the intestine, just as it is supposed that the greater portion of the lime-salts that enter into the formation of gall-stones are a pathological product of the mucous glands of the gall-bladder.

Yours respectfully,

ELEANOR C. JONES, M.D.

PHILADELPHIA,
December 15, 1896.

A RAPID METHOD OF FILTERING.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: In THE MEDICAL NEWS of March 21, 1896, p. 325, was an article by Dr. Friend of Milwaukee, entitled "A Rapid Method of Filtering." I have recently discovered a method which I believe to be new and decidedly more rapid and convenient than the one mentioned.

Take a pledget of absorbent cotton large enough to fill the lumen of a test-tube tightly and tie a long thread to the middle of it. Then force it to the *bottom* of the tube in such position that the thread, when drawn on, shall pull from the bottom of the pledget, thereby tending to expand instead of to contract it. Now fill the tube with the fluid to be filtered, and as soon as the cotton is sat-

urated and bubbles cease to rise from it, withdraw the cotton steadily by the thread. The cotton forms a piston of which the fluid is the valve and the thread is the rod. In withdrawing it a vacuum is formed, into which the fluid is forced. One can scarcely withdraw the pledget quickly enough to spill the fluid. Its advantages over the other methods are greater rapidity, no heating and cooling (so no liability of breaking test-tubes), and the ability to practically fill the tube with one manipulation.

Yours truly,

D. R. BOWEN, M.D.

WELLSBURG, N. Y.,
December 28, 1896.

OUR PHILADELPHIA LETTER.

[From our Special Correspondent.]

MEETINGS OF THE PHILADELPHIA PEDIATRIC SOCIETY, THE PHILADELPHIA COUNTY MEDICAL SOCIETY, AND THE PATHOLOGICAL SOCIETY OF PHILADELPHIA—DIVISION OF THE CHAIR OF ANATOMY AND CLINICAL SURGERY AT THE MEDICO-CHIRURGICAL COLLEGE—MEETING OF THE ALUMNI ASSOCIATION OF JEFFERSON COLLEGE.

January 17, 1897.

AT the first regular meeting of the Philadelphia Pediatric Society, held on January 12th, Dr. F. A. Packard presented a case of dilatation of the stomach. Dr. Alfred Stengel exhibited a case of chorea with arsenical neuritis. The patient—a boy about twelve years of age—had been given Fowler's solution of arsenic in ascending doses for the chorea, and was taking ten minims three times daily when the neuritis developed. All of the classical symptoms of neuritis could not be shown, yet those elicited confirmed this diagnosis to a greater extent than any other that could be advanced in the discussion of the case. An interesting and rare case of progressive neural atrophy was shown by Dr. C. S. Potts. The type was of the peroneal form described by Charcot and Tooth, the atrophy beginning in the muscles of the legs, with associated reactions of degeneration, and contractures. Three cases of cretinism were presented, one by Dr. H. B. Carpenter and two by Dr. H. M. Fussell. All of the patients were under twelve years of age, and were in no way related. Nothing new in the etiology of this condition was adduced, the point of especial interest being the marked improvement in all of the cases, both mentally and physically, under the administration of thyroid extract. A paper by Dr. George Woodward, on "The Chemistry of Colostrum Milk" proved to be a valuable addition to the scanty literature on this subject.

At a stated meeting of the Philadelphia County Medical Society, held on January 13th, an electrical headlight, the invention of Dr. Nephews of Chicago, was shown, which, from its efficiency and simplicity, should prove eminently satisfactory. The points in its favor are that, by an ingenious attachment, the current employed in the ordinary incandescent lamp system can be used, and that a switch on the headband of the apparatus accurately controls the current. Another lamp for use in the nasal cavity, or in other locations where light without heat is required, is so arranged that a continuous stream of water flows around it without interfering with the light, yet so controlling the radiation of heat that the illumination can be employed as long as desired without fear of injuring the surrounding parts. Dr. Thomas S. K. Morton exhibited a patient from whom he had removed the head of the right radius. The history of the case, when it came under his care, was that both bones of the forearm had been accidentally broken, but good union had been obtained, with, however, a neuritis of the parts and restriction of motion, which proved to be due to a forward dislocation of the radius at its head. Excision of this part of the bone down to the insertion of the biceps muscle completely restored all of its functions to the part. A case of extensive and entirely successful skin-grafting by Thiersch's method was also shown by Dr. Morton. Dr. J. P. Mann read a paper on the "Treatment of Club-foot," dividing the treatment of this condition into (1) mechanical and (2) mechanical and operating. Dr. Mann expressed himself as being essentially opposed to the removal of bone for the correction of the deformity, and stated that the employment of suitable apparatus after subcutaneous operation would accomplish equally good, if not better, results, except in the rarest of cases. Discussion of the paper by Drs. Willard, Young, Morton, and Davis agreed in the main with Dr. Mann's views, except that a larger field was conceded to the open operation than that granted by the author.

At a stated meeting of the Pathological Society, held on January 14th, Dr. D. J. McCarthy showed the specimen from a case of ruptured aneurism of the celiac axis. An interesting paper was read by Dr. J. Dutton Steele, on "The Distribution and Etiology of Cardiac Hydrothorax." Having noticed in a number of cases of hydrothorax of cardiac origin, observed clinically and collected from *post-mortem* records, that the effusion, if bilateral, was generally greater on the right side, and that if one pleura alone were the seat of the transudation, it was also, as a rule, the right, Dr. Steele had endeavored to find a solution for this (at least) singular coincidence. Eliminating all other causes for edema except the heart, he found that the right auricle, from its anatomical position in front of the root of the lung and the azygos vein, if enlarged, would interfere with the return circulation from the pleura on that side, and also that this is the chamber of the heart first to enlarge in cardiac weakness. The left auricle, if distended, will also produce a like result in the left pleura, but less frequently, on account of its physiological relation to the circulation.

The Board of Trustees of the Medico-Chirurgical College, at a meeting held on January 11th, decided to divide the chair of General, Descriptive, and Surgical Anatomy and Clinical Surgery held by the late Professor William H. Pancoast into two independent chairs of Anatomy and Surgery. It is a matter of much speculative interest as to who will be appointed to these positions.

The Alumni Association of Jefferson Medical College held its annual meeting on the evening of January 16th and elected officers for the ensuing year. Dr. N. G. McCormick of Williamsport, Pa., was chosen president. Among the vice-presidents may be mentioned Dr. Thomas

Addis Emmett, of New York, and Drs. W. H. Warner, John Strobel, I. P. Strettmater, and George McClellan, of Philadelphia.

TRANSACTIONS OF FOREIGN SOCIETIES.

Berlin.

THE INDICATIONS FOR VENESECTION—SUPPURATION IN THE NASAL CAVITIES A CAUSE OF MENINGITIS—PNEUMOCOCCI IN THE BLOOD OF PNEUMONIA PATIENTS—THE VIRULENCE OF PUS IN PELVIC SUPPURATIONS.

At the meeting of the Medical Society, November 25, 1896, the subject of *venesection* was discussed. EWALD said that he had never entirely given up its use. In the last ten years he had treated 111 cases of nephritis, 18 of which had uremic symptoms. Seven of these were treated by venesection. In four of them the result was prompt and satisfactory, but in three others no good results followed. Unfortunately, it is impossible to foretell which cases would be benefited. Very little is known about the physiologic effects following venesection. One can only say that the amount of blood withdrawn will very quickly be replaced from the lymph vessels. We know, further, that the blood pressure is affected only for a moment. In order to lower its tension for a considerable time it is necessary to withdraw a very large quantity of blood—many times as much as would be advisable in venesection. Ewald's opinion was that, in general, venesection is not practised as much as is desirable.

ALBU had seen the convulsions of uremia and epilepsy cut short by opening a vein. The same was true of carbonic-acid intoxication due to disease of the lungs or heart. In these cases no other treatment is capable of producing such swift and sure results. In pneumonia the time to practise venesection is at the height of the disease, just before the crisis, and before the paralysis of the heart has proceeded too far.

LANDAU confirmed the good results attributed to venesection in eclampsia.

SENATOR thought that venesection was indicated in most apoplectic attacks. He regretted that the indications for its use in this and other diseases were not better understood.

GRAWITZ called attention to the great increase in the number of leucocytes which follows hemorrhage. The blood also shows an increased quantity of sugar and a diminished alkalinity. A person who has lost blood usually perspires freely, and sometimes has fever, so that the reaction of the entire body which follows the loss of blood may well explain the good results which have been attributed to venesection.

At the session of December 2, 1896, TREITEL read a paper on the *diseases of the brain which follow suppuration in the nasal cavities*. This cause is not so important as that of inflammation in the ear. Thus, in 6000 autopsies there were 21 cases of brain abscess, 7 of which were secondary to trouble in the ear, while only 3 were derived from the nose. When one considers the intimate relations between the nasal and cranial cavities, it is rather surprising that infection by this route so seldom occurs. The veins, and probably the lymph vessels also, are directly connected through the cribriform plate with the sinuses of the skull. Besides this, there is the possibility of infection by contiguity. From a clinical point of view, several cases have been recorded in which the same coccus was found in the meninges and in the nasal cavities, and the cavities connected with them. In some of these the relation of cause and effect was clearly proved. In about one-third of them the abscess was extradural, while nearly one-half were abscesses of the brain itself.

Suppuration in the frontal sinuses is of practical interest both on account of its relative frequency and because it is easily accessible. Further, suppuration within the skull, if secondary to that of the frontal sinuses, is usually localized, and is naturally more easily reached than that, for instance, of the cavernous sinus.

SILEX reported a case of abscess of the frontal sinus, which was opened and a very foul pus evacuated. Irrigation and drainage relieved the pain and fever, but on the sixth day these symptoms recurred without evident cause, and three days later the patient died. Nearly the whole upper surface of the brain was covered with thick pus. In the brain substance were two small abscesses. The source of infection in this case was a carious molar tooth which produced suppuration of the antrum of Highmore, the frontal sinuses, and the ethmoidal cells. Such cases Silex considered to be far commoner in the eye-classes of a dispensary than is usually supposed.

At the session of the Union for Internal Medicine, held December 7, 1896, KOHN reported the results of the *examination of the blood in pneumonia*. By puncture of a vein in the arm, blood was obtained and examined bacteriologically. In twenty-three cases the result was negative. Eighteen of these patients recovered and five died, two from a staphylococcus-empyema. In nine instances pneumococci developed in the cultures from the blood. Seven of these patients died. Only two of them recovered after having developed pyemia with metastatic abscesses in one case, and empyema in the other. These were all cases of acute pneumonia. From these results it is evident that the presence of pneumococci in the blood of pneumonia patients renders the prognosis exceedingly unfavorable. This complication of the disease is properly spoken of as a pneumococcus sepsis, which is to be looked upon as a possible cause of death, in addition to those causes already recognized. The presence of pneumococci in the blood may result from the diminished power of the resistance of the body, equally as well as from the increased virulence of the bacteria. The bacteria were found in the blood from twenty-four to forty-eight hours before death. The treatment indicated was diaphoretic and diuretic, in order to facilitate the expulsion of the bacteria.

VON LEYDEN agreed in the main with Kohn, but did not think that this was a definite form of sepsis, as the cases in which pneumococci were found in the blood did not present a special clinical picture.

At the meeting of the Society for Obstetrics and Gynecology, held November 13, 1896, KIEFER discussed the *virulence of the pus in suppuration of the adnexa*. In

forty cases in which the peritoneum was soiled with pus at operation, the virulence of the pus must have been slight, as not one of the patients died from infection. The reason of this Kiefer considered to be the thick adhesions which rapidly form in the pelvis around suppurative foci. As a result the bacteria die out in the course of six months or a year, by reason of the over-production of their own toxins. During this time, therefore, extirpation is still indicated, while massage should be avoided. In abscess cavities which communicate with the vagina or intestine, the virulence of the germs may be kept up much longer.

MARTIN presented sections through the pelvis of a woman who died from heart disease with a moderate amount of ascites. From these sections it was shown that the ovary occupies a position just in front of the sacro-iliac synchondrosis. Its long axis is parallel to the long axis of the body. Its base is directed forward and a little outward, its free margin backward and inward. Other members of the Society who were present did not entirely agree with these conclusions.

SOCIETY PROCEEDINGS.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, December 9, 1896.

The President, DR. J. C. WILSON, in the chair.

EDWARD MARTIN, M.D., made a communication upon the

AMBULANT TREATMENT OF FRACTURES OF THE LEGS,

and demonstrated the method of applying the dressing, also exhibiting patients. By this means the patient, instead of being confined to bed for five or six weeks, can get about and attend to light duties. The treatment has been employed by Dr. Martin in upward of thirty cases, twelve within the past six or eight months, and the results in almost all have been good. In two the results were not thoroughly satisfactory, but in these the dressing was not applied by Dr. Martin personally. One of these was a case of Pott's fracture. The deformity, however, was not greater than is often noticed after other forms of treatment, but there should have been none. The other case was one of compound fracture, with marked shortening. Five cases were shown in which the treatment had been employed, and in all union appeared admirable, without obvious deformity.

Dr. Martin explained that he was not advocating this method of dressing particularly, nor was he endeavoring to prove that it was better than any other. He merely wished to decide what its real merits are, and he was simply taking testimony. The principle on which the dressing is based is that of fixation and shifting of support. Where one or both bones of the leg are broken, there is a tendency to overlapping of the bones when the weight is thrown upon the foot. If the weight of the body can be carried from above the fracture to the ground by external support, as by means of a plaster cast passing from the knee-joint to below the sole of the foot, the tendency to overlapping will be at once corrected. If, at the same time, the weight of the body can be kept from causing over-riding of the fragments, and the fragments be fixed in good position, there seems to be no good reason why the patient should not use his leg. In the ambulant splint this end is attained by so applying the plaster that the weight of the body is carried from the tibial tuberosities, just below the knee, to the reinforced portion of the dressing lying below the sole of the foot, pressure upon the malleoli being avoided by abundant cotton padding. By this means both of the joints contiguous to the fracture are fixed.

The dressing may be open to the objection that it prevents massage. It is inapplicable when there is great swelling, and when the shape of the legs is such that the weight cannot be carried from the tibial tuberosities to the rigid dressing that envelops the leg, as in fat women with small bones. The dressing should be applied as early as possible. It requires abundant padding with some elastic material. It must be so applied that the plaster does not press against the malleoli, and the plaster must be neatly fitted below the knee. It should be worn for from four to six weeks.

On the day following the application of the dressing the patient should be gotten out of bed and made to walk with the aid of an attendant, who supports him under the arm. In a day or two walking becomes possible with two crutches, in another day with one crutch, and in a week the patient can usually get along with a cane, or without any support. The dressing has the further advantage that it is attended with less atrophy than attends other modes of treatment. The plaster employed should be fresh and should be incorporated into gauze of a coarser mesh than that ordinarily employed.

After the fracture has been reduced, under an anesthetic if necessary, a flannel roller is applied. Cotton batting is next wrapped around the member and the plaster is applied. To flange out the lower part of the plaster and to give a little more strength to the dressing, slightly flexible steel rods, molded to the shape of the leg, are applied upon the sides. The toes should point upward, so as to avoid striking objects in moving about, and the heel should be a little lower than the toes. The malleoli should be thickly padded to avoid compression by the plaster. When the plaster is designed to bear pressure at the knee-joint the batting should be thinner there. To facilitate the cutting of the plaster when it is to be removed, a strip of lead may be incorporated in the dressing. The sole of the foot is padded with a mass of cotton at least three inches thick. The plaster bandage is applied with more firmness than usual, on account of the thick layer of batting. If the patient has been anesthetized the narcosis should be maintained until the dressing has become hardened. Twenty-four hours after the dressing has been applied the patient is permitted to put the foot to the ground.

DR. ERNEST LAPLACE spoke in favor of the mode of treatment, especially in cases in which it is desirable that the patient should not be confined to bed and to the house. It has the further advantage of diminishing the

danger of deformity or of imperfect union from contraction of irritated muscles.

DR. OSCAR H. ALLIS said that the oldest treatment on record, and one that has never been reversed, demands, first, replacement of the fragments, and secondly, their immobilization. As has been shown, these results can be secured equally with an ambulant dressing as with the fracture-box. Dr. Allis called attention to the possibility of medico-legal trouble from deformity or failure to unite in cases treated with the ambulant dressing. He further pointed out that placing the foot at right angles with the leg may result, through muscular action, in overlapping of the fragments.

DR. J. M. BARTON said that he had employed the ambulant method of treatment in several cases, with satisfactory results. As some patients are rendered uncomfortable by having the foot placed at right angles with the leg the heel may be very thickly padded, in order that some support may be received at this point.

DR. G. G. DAVIS stated that in most cases of fracture the results are directly proportionate to the amount of care expended upon them. He expressed a fear that in a difficult case the ambulant treatment would not be as efficacious as other means. He thought it would be better to defer its employment until eight or ten days after the fracture has occurred. He held that the treatment of fractures with plaster-of-Paris yields unsatisfactory results in unskilled hands, and is an untrustworthy dressing to use from the first. Displacements may take place beneath the dressing and remain undiscovered until its removal. The field for ambulatory dressings for fractures is limited. They are not at all applicable to fractures of the thigh. As a rule, not much harm results from the detention in bed necessary during the treatment of fractures of the leg by ordinary means, but when such detention is objectionable from any cause, the ambulant dressing should prove of great service. This result may be attained also by the use of a high shoe on the opposite foot and crutches, the leg being made immobile by a dressing of sodium silicate or other means. The same object may be effected by the use of a Thomas knee-splint, in which the support is taken upon the ischial tuberosities by parallel bars along the side of the leg.

Dr. J. P. MANN stated that he had used the ambulatory method of treating fractures on several occasions, but he was not convinced that it is the best method. He pointed out that there was some bowing in at least two of the cases shown, although this might have been present before, and it was not greater than is often seen after treatment by other means. In the treatment of such fractures the usual plaster-of-Paris splint is preferable, as during its application extension and proper apposition of the parts can be maintained. Thus, in a case of compound fracture of the tibia, a section of plaster dressing can be placed above the site of injury and another below and the two connected by strips of iron in turn bound in by plaster. If considerable swelling exist the limb can first be enveloped in cotton before the plaster is applied; when the swelling has subsided a firmer dressing can be substituted.

THOS. J. MAYS, M.D., read a paper on

THE LOCAL APPLICATION OF COLD IN ACUTE PNEUMONIA,

being the third collective report, with a discussion of fever in this disease. He presented a tabulated report of 104 cases of pneumonia treated by means of cold applications, in addition to 195 previously reported. Of ninety-four in which the sex was mentioned, sixty-three were in males, thirty-one in females. The patients varied in age from less than one year to between seventy-five and eighty. The highest temperature reached in any of the seventy cases in which this was noted was 106°F. The highest respiratory frequency in any of forty-seven cases was 50. The crisis in fifty-two cases took place between the second and tenth days. In seventy-six cases one lung was involved, in fifteen both lungs. Among the 104 cases there were three deaths—a mortality of 2.88 per cent. Among the total number of 299 there were ten deaths—a mortality of 3.35 per cent.

Dr. Mays considered at length the subject of fever and acute pneumonia in their relation to cold applied externally. He pointed out that the heat of the body is generated almost exclusively through oxidation, principally taking place in the muscles. Coincidentally there is a certain amount of heat-dissipation in a variety of ways. The temperature of the body will depend upon the relation that exists between these two processes, and it is maintained almost constant and uniform through the agency of a specialized nervous apparatus known as the thermotaxic mechanism. When the functions of this apparatus become deranged heat-production or heat-dissipation, or both, become disordered, and fever, or hyperpyrexia, or in some instances subnormal temperature results. In the lower forms of life, as in the molluscs and reptiles, the thermotaxic mechanism is but poorly developed, and the bodily temperature is largely dependent upon that of the surroundings, as is also that of warm-blooded animals poisoned with curare. In the first days of extra-uterine life the temperature of the body is subjected to wide variations, because at this time the thermotaxic mechanism is especially unstable. It has been shown that there exist in man six heat-regulating centers—two in the cortex and four at the base of the brain. Electric or mechanical irritation of these centers is attended with a rise of temperature lasting for hours at a time. Fever may therefore be looked upon as a neurosis, due to the disturbance of the thermotaxic mechanism, and not as a healthy reaction of the organism against the cause of disease. It is an indication that the function of heat-coördination is disordered, and is *per se* a morbid process. It has further been shown that the blood of animals dead from the effects of artificial fever contains a poison that causes convulsions, stupor, and death in guinea-pigs, sparrows, and frogs. The heat-centers at the base of the brain are in close anatomic relation with the respiratory center, and the rapid respiration that attends febrile states is due to irritation of this center. There is reason for believing that the pneumonic process itself is in a great measure dependent upon serious disturbance of the nervous system

in which the respiratory nerves and center participate very largely, and hence the increased frequency of breathing in this disease may be due partly to central and partly to reflex influences. The close anatomic relation of the several centers at the base of the brain may explain the frequency of respiration, the high fever and the convulsions that attend inflammatory disorders implicating the base of the brain, *e.g.*, pneumonia and cerebro-spinal meningitis, especially in young children. The foregoing considerations suggest the following therapeutic indications: (1) an abatement of the local process in the lungs; (2) a reduction of fever; and (3) an alleviation of cerebral and general nervous irritation. These indications will be more satisfactorily met by the use of cold applied externally than by any other measure. Not only will cold allay the morbid process in the lungs, but it exerts a direct ameliorating influence on the nerve-centers that play so important a part in the pathology of pneumonia.

The effects of cold applications to the chest are twofold: The cold limits and checks the extension of the pneumonic process and aids in bringing about resolution; by its influence upon the respiratory and the peripheral nerves of the thorax it has a profound sedative influence upon the heart, the respiratory, and the polypneic centers. Respiration and pulse are reduced in frequency; fever abates, the temperature sometimes falling several degrees in a very short time; crisis is hastened; and if the attack is not aborted its duration is materially shortened.

Cold applied to the head acts directly on the brain. Such applications should always be made when there is high fever, great restlessness, and general irritability, and they are not out of place in less severe cases.

The cold may be applied in the form of ice contained in rubber bags, or snow in rubber bags or wrapped up in towels, or towels wrung out in cold water. The bags may be wrapped in towels, applied over the inflamed area in the lung, and held in place with bandages. If the disease is confined to the anterior portion of the base of one lung, a single large bag will suffice, but if the exudation is more extensive, or lateral, or posterior, one or two more bags will be required.

The period during which the applications should be continued will be determined by the degree of fever present. If the temperature falls to the normal, or below, and remains there, the cold may be gradually removed. Too great haste, however, should not be made in the removal, for when the temperature rises subsequently it is less easy to reduce. It must be borne in mind that the applications are made not only to reduce temperature, but also to prevent extension of the morbid process in the lungs.

DR. JAS. TYSON stated that his personal experience in the treatment of pneumonia with cold had been so satisfactory that he had concluded to treat all cases of this disease presenting high temperature in this way. It is likely that this employment of cold is serviceable exactly as it is in the treatment of typhoid fever, while the high temperature, being less protracted, is less dangerous. There need be no fear of harm coming to the patient from the cold, however applied, so long as the fever lasts, but the application should be discontinued as soon as the temperature approaches the normal. It is well not to use cold in cases, especially in old persons and alcoholics, in which there is no elevation of temperature.

DR. JAS. M. ANDERS said that he had employed cold in the treatment of some eight cases of pneumonia, with good effects in all. In none was the disease aborted, but the general course of the attack seemed to be somewhat milder than under other methods of treatment. Cold is, however, not to be employed as a routine measure in this way; nor is it applicable to all cases of acute pneumonia. The cases should be selected. Neither infants nor old persons, nor those debilitated, or with markedly sensitive organizations, are suitable subjects. In some cases the application of cold will do harm rather than good. It is especially in the first stage of the disease that cold is useful in the treatment of pneumonia.

DR. H. A. HARE said that after the stage of congestion had passed and the second stage entered upon, indications must be met and combated as they arise. A temperature of 103° or 104° F. that lasts for only a day or two exerts no particularly deleterious influence, but when hyperpyrexia is reached heatstroke must be considered. It is not likely that cold applied to the chest does more than reduce the temperature. In the early stage of pneumonia the relief of congestion by appropriate measures should be attempted, but if the lung is choked up with exudate, the cold can be of little service. When the stage of consolidation has developed the continuous application of cold could not be hoped to expedite resolution and absorption; and great care must be exercised in the treatment of cases of pneumonia in which, on account of inherent feebleness or delicacy of the system, cold is contraindicated. The continued application of cold to the chest up to the occurrence of crisis may result in a sudden decline in the temperature, with the patient in collapse.

DR. S. SOLIS-COHEN said that if statistics could be relied upon to prove anything as to the treatment of a disease by a special method, the statistics presented would at first sight seem to prove the contention that cold had a special influence upon the pneumonic process; but cases of both catarrhal and croupous pneumonia differ so much in origin and in course, as well as in the complications with which they may be attended, in the age and constitution of the patient, and in the time and circumstances under which they are manifested, that it would be utterly impossible for any one plan of treatment to answer in every case. On the other hand, the statistics of Fenwick, from the London Hospital, including a thousand cases of acute lobar pneumonia, show clearly the usefulness of fever and of fever-heat as Nature's method of bringing about recovery. From these statistics it appears that thirty-five per cent. of all deaths coincided in time with the sudden defervescence, the only period more fatal than this being that of the highest fever. Cases attended with an average temperature of 103° F. presented the minimum of mortality, the states of apyrexia and of hyperpyrexia corresponding with the maximum of danger to life. Dr. Cohen has seen a number of cases in which cold applications

seemed to do good. If any general rule could be laid down, it might be to use cold applications whenever they added to the comfort of the patient; when they added to his discomfort, it may be inferred that they are harmful. A similar rule would apply to the use of hot applications.

DR. ERNEST LAPLACE maintained that the fever of pneumonia is a direct product of toxins circulating in the blood, resulting from the activity of the pneumococcus, and acting upon the thermogenic centers. It has been found that most violent diseases, surgical or medical, attended with high fever, have a tendency to recovery, while those attended with less fever display less of this tendency. Violent disturbances of the body, attended with high temperature, seem to lead to alterations of the soil that render this unfavorable to the life of the invading germs.

DR. J. C. WILSON emphasized the statement that the height of the temperature is not an index of the severity of the disease. There is no reason to believe that the application of cold to the chest has any direct influence upon the blood vessels of the interior of the lungs. It does, however, relieve pain, lower respiration, and reduce temperature. There is also no ground for believing that it limits the exudate or hastens crisis.

DR. J. P. C. GRIFFITH said that in watching the treatment of pneumonia with cold at Vienna years ago he found that it relieved pain, but did not influence the progress of the disease.

DR. M. V. BALL said that children between the ages of four and twelve with croupous pneumonia bear the treatment with cold very well, being relieved of pain and sleeping comfortably.

DR. MAYS in conclusion added that at first he had treated only cases of acute pneumonia with cold, but that the reports in cases of all kinds were so favorable that he did not continue to make the discrimination. While fever is not an index of the severity of the pneumonic process it is also no index of the degree of thermotaxic disturbance. Dr. Mays maintained that in many cases the local application of cold not only limits the pneumonic process, but that when applied early enough it cuts short the disease. While a temperature of 104° F. may not be dangerous to life in most cases, most physicians prefer to see a lower temperature; so that while fever may be a good thing for the disease it is a dangerous experiment for the patient. While the treatment with cold is not applicable to all cases of pneumonia it is available in the majority. It is not asserted that general bathing is useless in the treatment of pneumonia, but the best results are to be secured from the local application of cold.

ANNOUNCEMENTS.

THE STATUS OF PULMONARY TUBERCULOSIS IN NEW YORK CITY, AND ITS CONTROL BY THE BOARD OF HEALTH.

NEW YORK, January 11, 1897.

HON. CHARLES G. WILSON, PRESIDENT OF THE BOARD OF HEALTH.

SIR: Nearly eight years ago the Health Department of the City of New York took its first steps in the education of the people regarding the communicable and preventable character of pulmonary tuberculosis. At that time this view of the nature of tuberculosis was held by only a very small proportion of the medical profession; now it is not only the universal conviction of the medical profession, but also a wide-spread belief among the laity, that pulmonary tuberculosis results solely from the transmission of infectious material from the sick to the well, and is wholly preventable.

It is a little more than three years since the Board determined that the time had arrived when more energetic measures for the prevention of this disease could be properly taken, and adopted resolutions requiring the notification of all cases occurring in public institutions in this city; the inspection of premises in tenement house districts, the instruction of the occupants, when reported as suffering from tuberculosis, and the renovation, when required, of all rooms or apartments occupied by consumptives, which had been vacated by death or removal. The Board also at this time offered to assist physicians, free of charge, in the diagnosis of cases of suspected tuberculosis by the microscopical examination of the sputum.

The action of the Health Department in relation to this disease has always been as nearly abreast of the knowledge furnished by the most advanced scientific investigations as was practicable, and the methods adopted in the past have been followed by the most encouraging results.

The Department has cause for extreme gratification in the marked increase in intelligence and care, especially among the poor, which is observed in the presence of this disease, as the direct outcome of its conservative and educational policy, and in the proportionate curtailment of the danger and the suffering incident to it. During the past twelve years there has been a reduction of more than thirty per cent. in the general mortality from all tubercular diseases in New York City.

But the time has now arrived, we believe, when more comprehensive and radical measures should be adopted to rapidly and materially diminish the prevalence of pulmonary tuberculosis in this city.

Some idea of the enormous sanitary importance of the subject is obtained by reference to the records of the Department showing the reported cases and deaths during the past year. Nearly 9000 cases of tuberculosis were reported to this Department, and nearly 6000 deaths resulted from this disease. It is conservatively estimated that at least 20,000 cases of well-developed and recognized pulmonary tuberculosis now exist in this city, and an additional large number of obscure and incipient forms of the disease. A very large proportion of the former cases constitute more or less dangerous centers for infection, the degree of danger depending, in each instance, upon the intelligence and care which is exercised in the destruction of the expectoration. It may be safely assumed that from the failure to safely dispose of the sputum of consumptives, from thirty to fifty inhabitants of this city daily become infected by tuberculosis, and of these about one half later die from the disease.

All this suffering and death, in view of modern scientific knowledge, we know to be largely preventable by the efficient enforcement of simple, well understood, and easily applied methods of cleanliness, disinfection and isolation.

The knowledge now at command regarding the methods of extension of pulmonary tuberculosis entirely justifies the belief that its ravages can as certainly be limited by proper sanitary control and appropriate treatment as can other infectious diseases, more acute, more dramatic, and more readily communicated, but at the same time far less prevalent, less fatal, and incomparably less important to the welfare of the community. We fully believe that with proper regulations tuberculosis may be restricted within the narrowest bounds, and eventually, perhaps, almost exterminated. This is not the idle dream of sanitary enthusiasts or theorists, but is a conviction founded upon the most thorough and conclusive experimental investigations, which have been amply confirmed by practical experience.

In order to make possible such restriction in the prevalence of this disease, it is necessary that the Health Department shall assume a more complete and comprehensive control. This requires, first, the adoption of such measures as shall make possible the general sanitary supervision of pulmonary tuberculosis under well-defined conditions and regulations, differing in many respects from those applied to other more readily communicable diseases; second, the possession of such facilities for the care of the poor suffering from it, as shall make possible the removal, when necessary, of those who are dangerous sources of infection.

From the beginning of this work the officials of this Department have encountered, in the utter lack of proper facilities for the care of consumptives, an obstacle to practical success so great, and so disheartening, that we feel impelled to urge our conviction that the grave responsibilities which rest upon the Health Department in this matter cannot longer be adequately sustained without the immediate establishment, under its direct control, of a hospital for the care and treatment of this disease. No week passes in which the officials of this Department do not encounter many instances in which the members of many households, numerous inmates of crowded tenement houses, employés in dusty and unventilated workshops, and many others, are exposed to imminent peril from victims of this disease, to whom either the doors of our over-crowded public institutions are closed, or who reject all proffered assistance and instruction, and, from ignorance, indifference or inability through weakness due to the disease scatter infectious material broadcast, and thus diminish their own chances for recovery, and imperil the health and safety of others. In such cases the sanitary suggestions of the Health Department Inspectors are now futile, and effective action impossible. We are convinced that no other factor is so potent to-day in perpetuating that ominous death list from pulmonary tuberculosis, as the lack of proper facilities for the care of the poor of this city stricken with this malady.

The best medical opinion forbids that persons suffering from pulmonary tuberculosis be treated in association with other classes of cases in the general medical wards of general hospitals. This opinion is based on the daily observation that consumptives, when occupying hospital wards in common with other classes of cases, not only constitute a serious source of danger to other patients, but that they are themselves placed under peculiarly unfavorable conditions. This is an opinion which the former action of this Board has done much to establish and extend. It has very properly resulted in the exclusion, to a large extent, of persons suffering from this disease from many of the general hospitals to which they were formerly admitted.

The special hospitals for the treatment of pulmonary tuberculosis now existing in this city, are not free public hospitals, and are quite unable to meet the demands upon them by the poor. Much larger numbers than formerly of this unfortunate class of sufferers are forced to seek admission to the already over-crowded institutions of the Department of Public Charities, as other doors are closed to them; so that further provision for them must, of necessity, be made by the city. These cases appeal for care at all stages in the course of the disease, but, as a rule, seek for admission to the hospitals only when suffering with well developed, or advanced forms of consumption.

The Department of Public Charities is not able to provide separate accommodations, excepting to the most limited extent, even for these advanced cases, and, as a result, actual isolation does not exist in any of the municipal institutions. In every one of the institutions of the Department of Charities and the Department of Corrections consumptives are found occupying beds in the general wards of the various hospitals; associating with healthy prisoners in the cells, and in the greatly over-crowded work-rooms of the work-house and the penal institutions. Many of these cases, as we know from careful investigations, are sources of actual danger to their associates. No precautions whatsoever are taken with regard to the expectoration in many instances, and everywhere the precautions taken are utterly insufficient.

A communication has been referred recently to this Board by the Honorable Commissioner of Corrections regarding numerous cases of pulmonary tuberculosis which exist in the Workhouse, with the inquiry whether this Department could not, in some way, care for them. An investigation has shown that there are many cases of pulmonary tuberculosis among the inmates of the Workhouse; that these are, in part, in the hospital wards, and, in part, are among the well inmates in the sewing and work-rooms, which are badly ventilated, dusty, and excessively over-crowded. It was found that in these rooms there were no sanitary provisions whatsoever in regard to the expectoration, and the most favorable conditions existed for the transmission of the disease.

Over 2200 cases have been reported to this Board as admitted during the past year to the various institutions under the charge of the Department of Charities, and 900 cases in addition have been treated in the various

dispensaries under the charge of the Department of Charities.

As the Health Department has already declared its conviction that pulmonary tuberculosis is a communicable disease, and has taken steps looking toward its prevention, and as the information at hand shows that it is far more fatal than any other communicable disease with which the Board has to deal, and destroys each year more lives than all the other communicable diseases together, it would seem self-evident that some efficient and far-reaching measures should be at once adopted to protect the inhabitants of this city from its further ravages.

The importance of provision for the separate care of persons suffering from other forms of communicable disease has long been universally admitted, and the maintenance of separate hospitals for these diseases is justly recognized as one of the most effective of the sanitary measures for securing public safety. There are most urgent reasons why similar measures should be adopted in dealing with pulmonary tuberculosis.

A large experience in this matter has shown that in institutions devoted solely to the care of consumptives, the general welfare of the patients is more easily fostered, the risks of fresh infections more certainly diminished, and the chances for recovery more surely enhanced than in general hospitals in which all classes of cases are received.

We believe that such an institution in charge of the Health Department would secure all these advantages, without encroaching in any way upon the province of the institutions now caring for such patients, and would contribute, as no other measure can, to the success of the endeavor of the Department, now pursued in the face of hopeless obstacles, to curtail the ravages of pulmonary tuberculosis in New York.

We would, therefore, respectfully recommend:

1. That such action be taken by the Health Board as seems necessary and proper to at once secure the provision of hospital accommodations, under its charge, for the care of the poor suffering from pulmonary tuberculosis, who, as active sources of danger to the community, may properly come under its supervision.

2. That an amendment be made to the sanitary code declaring that tuberculosis be officially considered a communicable disease, and formulating regulations under which its sanitary surveillance shall be exercised.

3. That all institutions in this city which admit and treat cases of pulmonary tuberculosis be subjected to regular and systematic inspection by officials of this Board, and that specific regulations be established for the conduct of such institutions, in accord with the proposed amendment to the sanitary code.

4. That the scope of the measures designed for the education of the people in regard to the nature of pulmonary tuberculosis, and the methods to be taken for its prevention, be enlarged, and a closer sanitary supervision be maintained over individuals suffering from this disease in the densely populated tenement districts, and in the crowded work-shops and public buildings of this city.

(Signed) HERMANN M. BIGGS, M.D.,
Pathologist and Director of the Bacteriological Laboratories.

T. MITCHELL PRUDDEN, M.D.,
Consulting Pathologist.

Approved by the Board of Health of the Health Department, at a meeting held January 12, 1897.

EMMONS CLARK, Secretary. CHARLES G. WILSON, President.

ATTENUATED TEST CULTURES AS A SAFEGUARD AGAINST PSEUDO-REACTIONS IN SERUM DIAGNOSIS OF TYPHOID BY THE DRIED BLOOD METHOD.

TO THE PRESIDENT OF THE BOARD OF HEALTH OF THE PROVINCE OF QUEBEC.

SIR: In my work on serum diagnosis, done jointly with Dr. D. D. MacTaggart, we recently met with a series of peculiar partial reactions in which the dried blood solution from many perfectly healthy persons gave a very decided agglutination. The blood serum from the same persons was found much less liable to give these pseudo-reactions. This made it less easy to exclude other febrile diseases, and as with this test, accuracy in the negative diagnosis is of great practical importance, others who may meet with similar pseudo-reactions will be interested in learning how they may be avoided.

These pseudo-reactions were not encountered in our earlier cases when attenuated cultures were used. They began to appear when we employed the short time virulent cultures, and disappeared again on resuming the use of attenuated ones. Active, virulent cultures intensified by daily transplantation and growth at the body temperature, were therefore not suitable for the dried blood test. Where only active cultures are employed, we do not think that the dried blood method can be considered to have had a fair trial.

The explanation of this difference appears to be that the serum contains relatively less of the substances causing agglutination than solution of the entire blood. Hence solutions of the entire blood react more intensely to the test than solutions of the blood serum alone. This was the reverse of what we had anticipated.

It is found that old laboratory stock cultures kept at room temperature and transplanted at intervals of about one month give us the best result. Bouillon test cultures grown from this stock for twelve to twenty-four hours at body temperature, are found to react decisively with solutions of typhoid blood or typhoid serum, the reaction being as a rule well marked within fifteen minutes. With non-typhoid blood or serum solutions, the same test cultures give no reaction even after twenty-four or forty-eight hours' contact. Intra-peritoneal injection of 1 c.cm. of such living bouillon culture produces in guinea-pigs a marked blood reaction and immunity without much disturbance of health. We find that the best results in cases of dried blood are obtained with cultures where the motion, as seen under the microscope, is of a rapid gliding character, but free from darting movements. If the movement is sluggish, owing to too great attenuation of the culture, a few daily transplantations at body temperature will make it more active. Exact estimation of the degree of dilution has not been found necessary for ordinary diagnostic work when attenuated cultures are used. A very faint tint in the drop examined usually indicates sufficient strength. The solution should not be thick or viscid.

All the results which I have reported (*New York Medical Journal*, October 31, 1896, and *British Medical Journal*, December 5, 1896) were obtained with attenuated cultures. A report giving some additional technical details has been prepared and will be sent to any who desire further information.

I remain, yours respectfully,

WYATT JOHNSTON,
Bacteriologist to the Board of Health, Province of Quebec.

MONTREAL, January 7, 1897.